

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION III

841 Chestnut Building
Philadelphia, Pennsylvania 19107

SUBJECT: RCRA Corrective Action and
Incinerator Operation Permit
Modification
Radford Army Ammunition Plant
VA1 21 002 0730

DATE: FEB 23 1995

FROM: John J. Humphries, III, Chief
General States RCRA Programs Section (3HW52)

TO: Addressees

Attached for your concurrence is a permit modification of the Corrective Action and Incinerator Operation Permit for the Radford Army Ammunition Plant (RAAP), Radford, VA, the Response to Comments, and the cover letter transmitting the modified permit. The modifications are the result of the permit appeal settlement and new information regarding the hazardous waste incinerators feed rates.

EPA public noticed the draft RAAP Corrective Action and Incinerator Operation Permit on September 14, 1989. Although the scheduled effective date was December 13, 1989, an appeal by the Department of the Army to the EPA Administrator stayed all permit conditions until February 28, 1992 at which time a settlement of all issues on appeal was finalized and the appeal was withdrawn. This permit modification, public noticed on November 18, 1994, fulfills EPA's obligations with respect to the permit appeal negotiations.

The lead feed rate modification is the result of new information from a new, State and EPA approved trial burn plan. This permit modification also adds metal feed rates for nickel and selenium because the Agency has now developed Reference Air Concentrations which were not available when the original permit was issued in 1989. The Permittees did not comment on the additional feed limitations.

The draft permit modification also clarified permit language as to the criteria for proceeding from a Verification Investigation to a RCRA Facility Investigation. The Permittees have commented on the revised language although they are ineligible to comment on or to appeal the specific permit condition based on their previous acceptance of the permit condition (see attached Response to Comments).

The draft permit modification included the addition of a waste analysis attachment (taken from the State's permit) on which the Permittees also provided comments. The waste analysis attachment is modified as requested.

EPA is also terminating the Federal Facility Compliance Agreement, effective February 24, 1992, with the Army and the Consent Agreement, effective February 26, 1992, with Hercules for installation of air pollution control equipment. The effective date of the both Order's termination is the same as the effective date of the permit modification.

Hercules sale of the unit which operates Radford production facilities to Alliant Techsystems Inc. is expected to become effective March 3, 1995. It is intended to issue this permit modification prior to March 3 because Hercules, not Alliant, was a party to the permit appeal negotiations and settlement.

ORC concurrence is not being sought as this permit modification is the result of a negotiated settlement. A copy of the attached documents ~~has~~ ^{have} been provided ORC should they wish to provide comments.

CONCURRENCE

Latchaw, S. (3HW52)

Sherman Latchaw Date 2/23/95

Gross, G. (3HW51)

Gary Gross Date 2/23/95

Beck, M. (3HW52)

Mary Beck Date 2/21/95

Humphries, J. (3HW52)

John Humphries Date 2/22/95

Pilla, C. (3HW50)

Christopher Pilla Date 2/23/95

Vickers, M. (3HW03)

Christopher Pilla Date 2/23/95

Attachments: Response to Comments
Transmittal Letter
Permit Modification

RESPONSE TO COMMENTS ON THE
DRAFT PERMIT MODIFICATION
RADFORD ARMY AMMUNITION PLANT
VA1 21 002 0730
February 1995

Comments received on the draft permit modification public noticed November 18, 1994 were limited to two comments in a December 22, 1994 letter signed by the Hercules Aerospace Company's (Hercules) General Manager and the U.S. Department of the Army's (Army) Commanding Officer for the Radford Army Ammunition Plant. The comments and responses are as follows:

Comment 1. Please reference Part II Specific Conditions, B. Verification Investigation, 4. Verification Investigation Report, paragraph b. It appears that the modification requires RAAP to conduct a RCRA Facility Investigation (RFI) if any hazardous constituent exceeds the Practical Quantitation Limit (PQL) where the PQL is at or below the Health Based Number (HBN). RAAP can take "adequate samples" to demonstrate that the Hazardous constituent does not exceed HBN. "Adequate samples" needs to be quantitatively identified.

Requiring an RFI because a constituent is above PQL is unwarranted. HBN are established as a level to protect health and the environment. PQL is the level in which constituents can be detected by scientific means. As technology progresses PQL will continue to decline. This does not mean that the constituent is any more harmful to health and environment it just means that technology has advanced to be able to detect smaller amounts. No reference is allowed for background constituents. There are constituents that are in the groundwater or soil that occur naturally, requiring a RFI to clean up because of background is also unwarranted.

Response: Hercules and the Army have agreed to the above referenced permit condition as part of the appealed permit settlement and cannot appeal permit condition II.B.4.b.¹ In a letter to the Commanding Officer at Radford and to the Vice President and General Manager of Hercules, dated July 25, 1990 (enclosed), EPA made a settlement offer which included the above referenced permit condition. EPA's offer was repeated in a July 22, 1991 letter (enclosed). Each letter specifically highlighted that permit condition. During settlement negotiations and in letters from Hercules, the Army, and outside counsel, all parties accepted the revised language. The Army's February 25,

¹The modified permit condition language replaces the HBN with the PQL as the trigger requiring an RFI.

1992 letter "withdraws all issues raised on RCRA Appeal No. 89-40 regarding Radford Army Ammunition Plant."

With respect to the first paragraph of comment 1, it is correct that the permit requires an RFI at a solid waste management unit (SWMU) if release of a hazardous waste or constituent is detected, unless it can be shown that no release exceeds the HBN. Detection is defined as the PQL, unless the PQL is below the HBN when a lower method detection level is used. It should be noted that the Verification Investigation may involve only a limited sampling effort and detection at the PQL may not give reasonable assurance that there are no releases above the HBN. The term, "adequate samples", cannot be "quantitatively identified" as it is SWMU specific, e.g., a small SWMU could require fewer samples to be taken and analyzed than a large SWMU. Normally, the Verification Investigation work plan would identify the objective of the sampling effort, i.e., detection of a release of a hazardous waste or constituent or a demonstration that no releases exceeding a health-based level have occurred.

With respect to the second paragraph of comment 1, while the permit does not explicitly address background levels of hazardous constituents, presence of a hazardous constituent at its background concentration is not a "release" from a SWMU. EPA has demonstrated its consideration of background concentrations by commenting on the technical adequacy of the portion of the RCRA Facility Investigation Report, October 1992, regarding soil background levels.

Comment 2. Attached is the Hazardous Waste Permit for RAAP (V) modification accepted by the Commonwealth of Virginia Department of Environmental Quality. Please insert the revised pages into the referenced permit.

Response: The draft permit modification to include a waste analysis plan was not part of the permit appeal settlement. Therefore, the Permittees may comment on the waste analysis plan. The requested changes to Attachment B, Waste Analysis Plan, have been made. The requested changes make EPA's required Waste Analysis Plan consistent with the Plan as contained in the permit issued by the Virginia Department of Environmental Quality.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

PERMIT MODIFICATION

FOR CORRECTIVE ACTION AND INCINERATOR OPERATION

Permittee: ~~Radford Army Ammunition Plant~~¹

Hercules, Incorporated and the United States Department
of the Army²

Permit Number: VA1 21 002 0730

Facility: Radford Army Ammunition Plant
Radford, Virginia

This permit is issued by the United States Environmental Protection Agency (EPA) under the authority of the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) and the Hazardous and Solid Waste Amendments of 1984 (HSWA) 42 USC § 6901 et seq. and EPA regulations, to Hercules, Incorporated, ~~as the operator of Radford Army Ammunition Plant, owned by the United States Army, as the operator, and to the United States Department of Army, as the owner (together known as the Permittee) for the Radford Army Ammunition Plant,~~ a hazardous waste treatment, storage, and disposal facility in Radford, Virginia at latitude 37°11'45" North and longitude 80°30'30" West (facility).

The Permittee must comply with all terms and conditions of this permit. This permit consists of the conditions contained herein (Parts I, II, III and Attachments A, B, and BB) and the applicable regulations contained in 40 CFR Parts 260 through 264, 124, 268 and 270 as specified in the permit or which are, by statute, self-implementing. (See 40 CFR § 270.32(c)).

This permit is based on the assumption that the information provided to EPA by the Permittee is accurate. Further, this permit is based in part on the provisions of Sections 206, 212, and 224 of HSWA, which amend Sections 3004 and 3005 of RCRA. In particular, Section 206 requires corrective action for all releases of hazardous waste or hazardous constituents from any solid waste management unit at a treatment, storage, or disposal facility seeking a permit, regardless of the time at which waste was placed in such unit. Section 212 provides authority to review and amend the permit at any time. Any inaccuracies found in the submitted information may be grounds for the termination, modification or revocation and reissuance of this permit (see 40 CFR §§ 270.41, 270.42 and 270.43) and potential enforcement action. The Permittee

¹Original text.

²Modified text.

must inform EPA of any deviation from or changes in the submitted information which would affect the Permittee's ability to comply with the applicable statutes, regulations or permit conditions.

This permit is effective as of December 13, 1989 except that the modified text is effective March 31, 1995, and shall remain in effect until November 7, 1999, unless revoked and reissued, modified or terminated in accordance with 40 CFR §§ 270.41, 270.42, 270.43 or continued in accordance with 40 CFR § 270.51(a).

PART I - STANDARD CONDITIONS

A. EFFECT OF PERMIT

This permit authorizes only the management of hazardous waste expressly described in this permit and does not authorize any other management of hazardous waste.

The full RCRA permit is comprised of EPA's portion, which addresses the provisions of the Hazardous and Solid Waste Amendments of 1984, and the Virginia Department of ~~Waste Management's~~¹ Environmental Quality² portion, which addresses the provisions of RCRA for which the Commonwealth of Virginia is authorized. The Commonwealth of Virginia is authorized to administer and enforce those provisions of RCRA that were in effect prior to the enactment of the Hazardous and Solid Waste Amendments of 1984. This portion of the permit, which addresses the Hazardous and Solid Waste Amendments of 1984, will be enforced by EPA. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, or invasion of other private rights, or any infringement of State or local laws or regulations (40 CFR §§270.30(g) and 270.4(b) and (c)). Compliance with the terms of this permit does not constitute a defense to any action brought under Section 7003 of RCRA (42 USC § 6973), Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, (42 USC § 9606(a)) (commonly known as CERCLA), or any other law governing protection of public health or the environment.

Nothing contained herein shall in any way be deemed to waive the Permittee's obligation to comply with 40 CFR Part 270, Subpart C, and applicable regulations set forth at 40 CFR Part 124.

B. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause as specified in 40 CFR §§ 270.41, 270.42, 53 Federal Register 37912, 37936-37942 (September 28, 1988), and §270.43. The filing of a request for a permit modification, revocation and reissuance, or termination or the notification of planned changes or anticipated noncompliance on the part of the Permittee, does not stay the applicability or enforceability of any permit condition (40 CFR § 270.30(f)). Review of any application for a permit renewal shall consider improvements in the state of control and measurement technology, as well as changes in applicable regulations and laws.

¹Original Text

²Modified Text

C. PERMIT CONDITIONS

Pursuant to Section 3005(c)(3) of RCRA, this permit contains those terms and conditions determined necessary to protect human health and the environment (40 CFR § 270.32(b)(2)).

D. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby (40 CFR § 124.16(a)(2)).

E. DEFINITIONS

For the purpose of this permit, terms used herein shall have the same meaning as those set forth in Title 40 of the Code of Federal Regulations (40 CFR Parts 260 through 264, 268 and 270), unless this permit specifically states otherwise. Where terms are not otherwise defined, the meaning associated with such terms shall be as defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the terms. The following definitions also apply to this permit.

1. Regional Administrator - Regional Administrator of the United States Environmental Protection Agency for the Mid-Atlantic Region (Region III), his designee or authorized representative.
2. Director - Director of the Commonwealth of Virginia Department of ~~Waste Management, Division of Technical Services,~~ Environmental Quality his/her designee or authorized representative.
3. Release - any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.
4. Solid Waste Management Unit - any discernible unit at a facility seeking a RCRA permit from which hazardous waste or hazardous constituents might migrate, irrespective of whether the unit was intended for the management of solid and/or hazardous waste.
5. Facility - all contiguous property under the control of the owner or operator at which the units subject to permitting are located (except for permit condition I.I.10 and I.I.13 where the definition found in 40 CFR §260.10 shall apply).

F. REPORTS, NOTIFICATIONS AND SUBMISSIONS TO THE REGIONAL ADMINISTRATOR

All reports, notifications or other submissions which are required by this permit to be sent or given to the Regional Administrator or EPA shall be sent by Certified Mail or given to:

RCRA Programs Branch (3HW50)
EPA Region III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

G. SIGNATORY REQUIREMENTS

All reports or other information submitted to the Regional Administrator or Director shall be signed and certified as required by 40 CFR §§ 270.11(b) and 270.30(k).

H. DOCUMENTS TO BE MAINTAINED AT THE FACILITY SITE

The Permittee shall maintain at the facility all documents required by this permit and amendments, revisions and modifications to these documents. The Permittee shall maintain at the facility a written operating record that complies with all the requirements of 40 CFR § 264.73.

I. DUTIES AND REQUIREMENTS

1. Duty to Comply. The Permittee shall comply with all conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit. Any other permit noncompliance constitutes a violation of RCRA and is grounds for enforcement action, permit termination, revocation and reissuance, or modification, or for denial of a permit renewal application. (40 CFR § 270.30(a))
2. Duty to Reapply. If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must submit a complete application for a new permit at least 180 days before this permit expires. (40 CFR §§ 270.10(h) and 270.30(b))
3. Permit Expiration and Continuation. Pursuant to 40 CFR § 270.50, this permit shall be effective for a fixed term not to exceed ten years. Pursuant to 40 CFR § 270.51, this permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely and complete application (see 40 CFR § 270.10 and §§ 270.14 - 270.29) and through no fault of the Permittee, the Regional Administrator or Director has not issued a new permit under 40 CFR § 124.15.

4. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (40 CFR § 270.30(c)).
5. Duty to Mitigate. In the event of noncompliance with this permit, the Permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. (40 CFR § 270.30(d))
6. Proper Operation and Maintenance. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment, monitoring, and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems when necessary to maintain compliance with the conditions of the permit. (40 CFR § 270.30(e))
7. Duty to Provide Information. The Permittee shall furnish, within the specified time, any relevant information which the Regional Administrator or Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Regional Administrator or Director, upon request, copies of records required to be kept by this permit. (40 CFR §§ 270.30(h) and 264.74(a)).
8. Inspection and Entry. Pursuant to 40 CFR § 270.30(i), the Permittee shall allow the Regional Administrator or Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
 - a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - d. Sample or monitor, at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by RCRA, any substances or parameters at any location.
9. Monitoring and Records. Pursuant to 40 CFR § 270.30(j), the Permittee shall comply with the following requirements.
- a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. All sampling and analysis shall be of adequate quality, scientifically valid, of known precision and accuracy, and of acceptable completeness, representativeness and comparability. Laboratory analysis of samples must be performed using an appropriate method for testing the parameter(s) of interest taking into account the samples' matrix. Use of the test methods found in the Agency publication, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, (SW-846), shall be used for: the EP toxicity test and the analytical methods used to determine the EP toxicity test analytes (40 CFR § 261.24); the Free Liquids Test (Method 9095) used to determine if free liquid is a component of a waste as a specific requirement for bulk and containerized wastes (40 CFR § ~~264.213~~264.314(c) and § ~~265.213(d)~~265.314(d)); and the chemical analysis of wastes for hazardous waste incineration permits (40 CFR § 270.62(b)(2)(i)(C)).
 - b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, the certification required by §264.73(b)(9) of this chapter, and records of all data used to complete the application for this permit for a period of at least three (3) years from the date of the sample, measurement, report, certification or application. These periods may be extended by request of the Regional Administrator or Director at any time and are automatically extended during the course of any unresolved enforcement action regarding this facility. The Permittee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations, for the active life of the facility, and for disposal facilities for the post-closure care period as well.

c. Records of monitoring information shall specify:

- (1) The date, exact place, and time of sampling or measurements;
- (2) The individual(s) who performed the sampling or measurements;
- (3) The date(s) analyses were performed;
- (4) The individual(s) who performed the analyses;
- (5) The analytical techniques or methods used; and
- (6) The results of such analyses.

10. Reporting Planned Changes and Anticipated Noncompliance. The Permittee shall give notice to the Regional Administrator at least 30 days prior to any planned physical alterations or additions to the permitted facility. The Permittee shall give the Regional Administrator and Director at least 45 days advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. For purposes of this permit condition, the definition of "facility" as found in 40 CFR § 260.10 shall apply. (40 CFR §§ 270.30(1)(1) and (2))

11. Transfer of Permit. In accordance with 40 CFR § 270.30(1)(3), this permit is not transferable to any person, except after notice to the Regional Administrator and Director. The Regional Administrator or Director may require modification or revocation and reissuance of the permit to identify the new Permittee and incorporate such other requirements as may be necessary under RCRA (40 CFR § 270.40).

At least 30 days prior to transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new owner or operator in writing of the requirements of 40 CFR Parts 264 and 270, and at the same time shall send a copy of such notice to the Regional Administrator and Director.

12. Twenty-four Hour Reporting. Pursuant to 40 CFR § 270.30(1)(6), the Permittee shall report to the Regional Administrator and Director any noncompliance which may endanger health or the environment. Information shall be provided orally as soon as possible, but no later than twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. This report shall include the following:

- a. Information concerning release of any hazardous waste or hazardous constituent that may cause an endangerment to public drinking water supplies.
 - b. Any information of a release or discharge of hazardous waste, hazardous constituent or of a fire or explosion from the facility, which could threaten the environment or human health outside the facility. The description of the occurrence and its cause shall include:
 - (1) Name, address, and telephone number of the owner or operator;
 - (2) Name, address, and telephone number of the facility;
 - (3) Date, time, and type of incident;
 - (4) Name and quantity of material(s) involved;
 - (5) The extent of injuries, if any;
 - (6) An assessment of actual or potential hazards to the environment and human health outside the facility, where this is applicable; and
 - (7) Estimated quantity and disposition of recovered material that resulted from the incident.
 - c. A written submission shall also be provided to the Regional Administrator and Director within five (5) days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Permittee need not comply with the five (5) day written notice requirement if the Regional Administrator and Director waive that requirement and the Permittee submits a written report within fifteen (15) days of the time the Permittee becomes aware of the circumstances.
13. Immediate Reporting of Releases. In accordance with the requirements of 40 CFR § 264.56(d)(1) and (2), if the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he must report his findings as follows:

- a. If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and
 - b. He must immediately notify either the government official designated as the on-scene coordinator for that geographical area, (in the applicable regional contingency plan under 40 CFR Part 1510) or the National Response Center (800/424-8802). The report must contain the information required under 40 CFR § 264.56(d)(2)(i) through (vi).
14. Other Noncompliance. The Permittee shall report all other instances of noncompliance not otherwise required to be reported above, at the time monitoring reports are submitted. The reports shall contain the information listed in permit condition I.I.12. (40 CFR § 270.30(l)(10))
 15. Other Information. Whenever the Permittee becomes aware that it failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Regional Administrator or Director, the Permittee shall notify the Regional Administrator or Director of such failure within 7 days. The Permittee shall submit the correct or additional information to the Regional Administrator or Director no later than 14 days of becoming aware of the deficiency. (40 CFR § 270.30(l)(11))
 16. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each schedule date. (40 CFR § 270.30(l)(5))
 17. Biennial Report. Pursuant to 40 CFR § 270.30(l)(9), a report must be submitted to the Regional Administrator or Director, as appropriate, covering facility activities by March 1 of odd numbered calendar years. The report shall contain the information required in 40 CFR § 264.75.
 18. Land Disposal Restrictions. All activities of the Permittee which involve the land disposal of hazardous waste are subject to the Land Disposal Restrictions. (RCRA §§ 3004(b)-(m))

PART II - SPECIFIC CONDITIONS

A. CORRECTIVE ACTION FOR CONTINUING RELEASES

Section 3004(u) of RCRA (Section 206 of HSWA) and regulations promulgated as 40 CFR § 264.101 require corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit, regardless of when waste was placed in the unit, for all permits issued after November 8, 1984.

This permit requires the Permittee to conduct a Verification Investigation (VI) and, if necessary, a RCRA Facility Investigation (RFI) for suspected releases from specific solid waste management units (SWMUs), and to conduct a RFI at specified SWMUs. If EPA determines that a Corrective Measures Study is necessary, the Permittee will be required to conduct a Corrective Measures Study for those SWMUs which threaten human health or the environment.

If EPA finds that corrective measures are necessary to protect human health and the environment, EPA will propose a major permit modification and follow appropriate procedures including a public notice period and, if requested, a public hearing.

The Permittee may, at any stage of the investigation, propose corrective measures for the remediation of releases of hazardous waste or hazardous constituents. For releases to soil and groundwater, the Permittee must show to EPA's satisfaction that the subsurface conditions and contaminant plume have been adequately characterized and that the proposed corrective measures will adequately remove, contain, or treat the released hazardous waste or hazardous constituents. Conditions for releases to other media shall likewise be adequately characterized. Initiation or pursuit of such a demonstration by the Permittee shall not postpone or stay the requirements of this permit. Approval of such a demonstration by EPA shall allow the Permittee to dispense with certain stages of the investigation, as identified in EPA's approval of the demonstration. The permit shall be modified according to permit condition II.J. prior to implementation of corrective measures.

Failure to submit the information required in this permit or falsification of any submitted information is grounds for termination of the permit (40 CFR § 270.43). All information submitted must be certified as required by 40 CFR § 270.11(d).

B. VERIFICATION INVESTIGATION

1. Within 180 calendar days of the effective date of this permit, the Permittee shall submit to the Regional Administrator and the

Virginia Department of ~~Waste Management~~¹ Environmental Quality² a work plan for a Verification Investigation. The plan must be approved by EPA in accordance with permit condition II.I (Submissions to Agency and Dispute Resolution) of this permit. The Verification Investigation shall include each of the following solid waste management units (SWMUs) [or groups of units] identified in permit condition II.B.2.a.(1). The Verification Investigation shall meet the following minimum objectives and requirements.

The Verification Investigation objectives are:

- a. Identify releases or suspected releases of hazardous waste or hazardous constituents into soil, sediments, surface water and groundwater which need further investigation and/or implementation of interim measures at the facility; and
- b. Screen from further investigation those solid waste management units (SWMUs) which do not pose a threat to human health or the environment; and, as an option,
- c. Characterize the waste contained in selected SWMUs to determine if hazardous waste or hazardous constituents are contained within the unit.

2. Verification Investigation Work Plan requirements.

a. Verification Sampling and Analysis Plan.

- (1) The Verification Sampling and Analysis Plan shall provide for the analyses for constituents released to the media identified from the SWMUs listed below. The sampling plan shall provide for the analyses identified in Attachment A. All aqueous samples shall be analyzed for Total Organic Carbon and Total Organic Halogen and tested for pH. Also, any hazardous constituent not listed in Attachment A, that is known or suspected by the Permittee to have been treated, stored, disposed or contained in the unit, shall also be included for analysis. The following units shall be investigated:

¹Original Text

²Modified Text

SWMU NUMBER AND NAME	MEDIA	INVESTIGATE FOR
6. Acidic Wastewater Lagoon	Soil Groundwater	Metals
8. Calcium Sulfate Settling Lagoons (2) (A-B Line Acidic Wastewater)	Groundwater	Volatiles and Semivolatiles
9. Calcium Sulfate Settling Lagoons (2) (C Line Nitrocellulose Wastewater)	Groundwater	Volatiles and Semivolatiles
10. Biological Treatment Plant Equalization Basin	Groundwater	Volatiles and Semivolatiles
13. Waste Propellant Burning Ground Burning Pan Area, Former Open Ground Burning Area, Run-Off Settling Basin (see permit con- dition II.C.2.d(1))	Groundwater	Metals Semivolatiles Explosives
26. Fly Ash Landfill No. 1	Groundwater	Metals Volatiles and Semivolatiles, List 2
27. Calcium Sulfate Landfill	Groundwater	Volatiles and Semivolatiles
29. Fly Ash Landfill No. 2 Run-Off Basin Drainage Ditch	Groundwater Soil	Metals Volatiles and Semivolatiles, List 2 Metals
31. Coal Ash Settling Lagoons	Groundwater Soil	Metals Semivolatiles
32. Inert Waste Landfill No. 1	Groundwater	Metals Volatiles and Semivolatiles
35 and 36. Calcium Sulfate Drying Beds (Northeast Section)	Groundwater Soil (under beds)	Volatiles and Semivolatiles

✓ 37 and 38. Calcium Sulfate Drying Beds (Northwest Section)	Groundwater Soil (under beds)	Volatiles and Semivolatiles
39. ✓ Incinerator Wastewater Ponds	Groundwater Soil (adjacent to spray pond)	Metals Semivolatiles
40. ✓ Sanitary Landfill (Nitroglycerine Area)	Groundwater	Metals Volatiles and Semivolatiles
✓ 41. Red Water Ash Landfill (Southeast of Manufacturing Area)	Groundwater	Metals Semivolatiles
✓ 43. Sanitary Landfill (Adjacent to New River)	Groundwater	Metals Volatiles and Semivolatiles
✓ 45. Sanitary Landfill (West of Main Bridge)	Groundwater	Metals Volatiles and Semivolatiles
✓ 46. Waste Propellant Disposal	Soil	Metals Explosives
48, ✓ 49 and 50. ✓ Oily Wastewater Disposal, Red Water Ash Disposal and Calcium Sulfate Disposal	Groundwater	Metals Volatiles and Semivolatiles
✓ 53. Activated Carbon Disposal Area	Groundwater	Metals Volatiles and Semivolatiles
✓ 54. Disposal Area For Ash From Burning of Propellants	Groundwater	Metals Volatiles and Semivolatiles Explosives
✓ 57. Pond by Buildings No. 4931 and 4928	Soil Surface Water	Metals Volatiles and Semivolatiles
✓ 58. Rubble Pile	Soil	Metals Volatiles and Semivolatiles
✓ 59. Bottom Ash Pile (see permit condition II.B.2.a.(1)(c))	Soil	Metals Semivolatiles
✓ 61. Mobile Waste Oil Tanks (see permit condition II.B.2.a.(1)(b))	Soil	Metals Semivolatiles

68.	Chromic Acid Treatment Tanks	Soil	pH Metals
69.	Pond by Chromic Acid Treatment Plant Tanks (see permit condition II.B.2.a.(1)(d))	Soil Surface Water	pH Metals
71.	Flash Burn Parts Area	Soil	Metals Explosives
74.	Inert Landfill No. 3	Groundwater	Metals Volatiles and Semivolatiles
75.	Waste Oil Underground Storage Tank (see permit condition II.B.2.a.(1)(b))	Soil	Metals Semivolatiles
76.	Waste Oil Underground Storage Tank (South of Oleum Plant) (see permit condition II.B.2.a.(1)(b))	Soil	Metals Semivolatiles
Doc F	Drum storage Area by Building No. 9387-2	Soil	Volatiles and Semivolatiles
Doc Q	Abandoned Lagoon	Soil	Volatiles and Semivolatiles
Doc P	Scrap Metal Salvage Yard-Spent Battery Storage Area	Soil	Metals

The Permittee may combine individual SWMUs into study areas.

- (a) If the wastes in Units 1, 8, 9, 31, 35, 36, 37, 38, 39, 41, 48, 49 or 50 are homogeneous, the Permittee may elect to demonstrate through waste analysis that the units do not contain hazardous constituents. The Verification Sampling Plan which will be used to make this demonstration shall be submitted to EPA and the Virginia Department of ~~Waste Management~~ Environmental Quality for EPA approval within 90 calendar days of the effective date of this permit. The sampling report shall be submitted to EPA and the Virginia Department of ~~Waste Management~~ Environmental Quality within 120 calendar days of receipt of EPA's approval of the Verification Sampling Plan.
- (b) For Units 61, 75 and 76 the Permittee may elect to remove oil-stained surficial soils. If the Permittee so elects, the Verification Investiga-

tion Work Plan shall contain documentation that the soil has been removed and properly disposed of.

- (c) In addition to Unit 59, the Permittee shall identify and investigate any and all other bottom ash storage areas.
 - (d) For Unit 69, identify current use of the unit.
 - (e) For Unit 45, the Work Plan shall identify procedures to be used to determine the location of the unit.
 - (f) If information exists which fulfills the objectives of the Verification Investigation for any of the SWMUs listed above, the Permittee may submit complete documentation for EPA approval within 30 calendar days of the effective date of the permit. Such a submittal shall not stay the requirements of this permit until and unless the submittal has been approved by EPA.
- (2) The Verification Sampling Plan shall include:
- (a) Background information - The Permittee shall identify and provide current and historical site information which relates to the proposed sampling and data collection effort;
 - (b) Maps - The Permittee shall include all pertinent locations on maps and shall locate all sampling points. The map scale shall be no greater than one inch equals 200 feet;
 - (c) Rationale for sample locations and number of samples. The Permittee shall:
 - (i) Identify the specific sampling points for each SWMU for each potentially affected environmental media; and
 - (ii) Provide the rationale and selection process utilized for the selection of final sampling points;
 - (d) The Permittee may elect to perform appropriate screening (geophysics, soil gas) prior to selecting specific sampling points;
 - (i) Screening methods shall not replace direct sampling.

- (ii) Should the Permittee elect to perform screening prior to sampling, the time to submit the Verification Investigation Report shall be increased by 90 calendar days, permit condition II.B.4;
- (e) Unit-specific downgradient groundwater sampling points must be identified for each SWMU. These may either be existing monitoring wells, new monitoring wells installed specifically down-gradient to the unit, or a method appropriate for one-time sampling of the groundwater;
- (f) Soil sampling points must be selected where contamination is most likely considering topography, unit characteristics, waste mobility, etc.;
- (g) Surface water sampling points;
- (h) Sediment sampling points; and
- (i) Run-off sampling points.
- (3) The Permittee shall submit a Quality Assurance Plan, and a Sample Collection Methods and Procedures Plan, conform to the analytical requirements and provide the Laboratory Deliverables as specified in Attachment B.
- (4) EPA and the Virginia Department of ~~Waste Management~~ Environmental Quality reserve the right to require split samples. Where split samples are taken and analyzed by EPA, EPA will provide the results to the Permittee for evaluation in the Verification Investigation Report. The Permittee shall identify a procedure in the work plan for notifying both agencies of the sampling dates.
- (5) If any of the units contain hazardous wastes, the Permittee shall comply with applicable regulations including the Land Disposal Restrictions as contained in 40 CFR Part 268 and 52 FR 31138-31222 (August 17, 1988) and 54 FR 8264 (February 27, 1989). If soil, such as the cuttings from groundwater monitoring well installation, are contaminated with a listed hazardous waste or a characteristic waste then disposal is regulated by 40 CFR Part 268.

When groundwater or soil is contaminated by a listed waste, it is deemed to be a hazardous waste and is likewise regulated by 40 CFR Part 268.

b. Acid and Industrial Sewers.

The Permittee shall prepare a plan, together with an implementation schedule, for the investigation of the structural integrity of both the acid and industrial sewers.

- c. The Verification Investigation Work Plan shall include a schedule for implementation, identifying components of the plan. During the implementation of the Work Plan, the Permittee shall submit bi-monthly progress reports to EPA and the Virginia Department of ~~Waste Management~~ Environmental Quality beginning two months after EPA's approval of the plan.

d. Community Relations Plan.

The Permittee shall prepare a fact sheet describing the scope and objectives of the field activities. This fact sheet shall be furnished to local officials or citizens should any inquiries be made about the field activities.
~~(1) Safety Plan.~~

e. Safety Plan

The Permittee shall prepare a Safety Plan for each sampling activity. The Permittee shall consult appropriate guidance such as Standard Operating Safety Guides, USEPA, July 1988 (SOSG) and OSHA regulations at 29 CFR 1910 that explains how to develop a proper site Safety Plan.

While EPA may comment on the Safety Plan, EPA will not approve or disapprove the plan.

3. Within 240 calendar days, or 330 calendar days if screening methods are employed (permit condition II.B.2.a.(2)(d)(ii)) of EPA's approval of the Verification Investigation Work Plan, the Permittee shall fulfill the requirements of the Verification Investigation Work Plan and submit a Verification Investigation Report for EPA's approval. The Permittee shall also submit the Verification Investigation Report to the Virginia Department of ~~Waste Management~~ Environmental Quality.

4. Verification Investigation Report.

- a. The Verification Investigation Report shall contain all data organized in a logical sequence and include summaries of all findings, problems encountered during the investigation, actions taken to correct the problems, and copies of daily reports, inspection reports, laboratory/monitoring data, etc. The report shall contain conclusions and recommendations. The selected recommendation for each solid waste

management unit shall be adequately justified. Recommendations include but are not limited to:

- (1) No further action required, if the analytical results are below the levels identified in permit condition II.B.4.b which, together with the present physical condition and operating conditions of the unit indicate no potential threat to human health or the environment exists; or
- (2) Continued monitoring may be considered where analytical results are below the levels identified in permit condition II.B.4.b but where the presence of hazardous waste or hazardous constituents, together with the present physical condition and operating conditions indicate a threat may exist in the future;
- (3) Conduct a RCRA Facility Investigation (RFI) to characterize the rate and extent of releases from SWMUs, groups of SWMUs, or other areas of concern, when the analytical results exceed the levels identified in permit condition II.B.4.b; or
- (4) Planning and implementing interim measures at the facility. See permit condition II.H., Interim Measures.

b. A RCRA Facility Investigation is required if it is likely that release of a hazardous constituent has occurred (RCRA Facility Assessment Guidance, EPA, October 1986). An RFI shall be performed if any hazardous constituent released to groundwater, surface water or soil exceeds:

- ~~(1) The health based level as derived in a manner consistent with EPA guidelines (51 Federal Register 33992, 34006, 34014, 34028): for carcinogens, represent a concentration associated with an excess upper bound lifetime risk of 1×10^{-6} due to continuous constant lifetime exposure, and for systemic toxicant, represent a concentration to which the human population, exposed to on a daily basis, is not likely to suffer an appreciable risk of deleterious effect during a lifetime. Any list prepared by EPA according to these procedures may be used. Such a list is contained in Chapter 8, RCRA Facility Investigation, Interim Final, May 1989. As these lists may be revised at any time based on new information, contact EPA for guidance; or~~
- ~~(2) The Practical Quantitation Limit (PQL) for groundwater samples. PQLs are the lowest concentrations of analytes that can be reliably determined within specified limits of precision and accuracy by SW 846~~

~~methods under routine laboratory operating conditions. Should the POL not be practical, the Permittee must justify the use of a higher number.~~

~~(3) Except where:~~

~~(a) Health based levels are below Method Detection Levels for every SW 846 method capable of identifying that particular hazardous constituent; or~~

~~(b) An adequate number of samples have been taken and analyzed to demonstrate that releases exceeding health based levels have not occurred and either:~~

~~(i) Future releases will not occur, e.g., wastes have been removed from the unit; or~~

~~(ii) A monitoring program is established.~~

(1) The Practical Quantitation Limit (POL) where the POL is at or below the health-based level³. POLs are the lowest concentrations of analytes that can be reliably determined within specified limits of precision and accuracy by SW-846 (Test Methods for Evaluation Solid Wastes: Physical/Chemical Methods) methods under routine laboratory operating conditions. Should the POL not be practical, the Permittee must justify the use of a higher number. This justification must be in the Verification Investigation Plan, if known at that time, or the Verification Investigation Report; or

(2) The method detection limit where the POL is greater than the health-based limit.

Except where an adequate number of samples have been taken and analyzed to demonstrate that concentrations of hazardous

³The health-based level for such hazardous waste or hazardous constituents as derived in a manner consistent with EPA guidelines set forth in 51 Federal Register 33992, 34006, 34014, 34028. The health-based level for carcinogens represents a concentration associated with an excess upper bound lifetime risk of 1×10^{-6} due to continuous constant lifetime exposure, and for systemic toxicants represents a concentration to which the human population, exposed to on a daily basis, is not likely to suffer an appreciable risk of deleterious effect during a lifetime. Any list prepared by EPA according to these procedures may be used. Such a list is contained in Chapter 8, RCRA Facility Investigation, Interim Final, May 1989. As these lists may be revised at any time based on new information, contact EPA for guidance.

waste or hazardous constituents in groundwater, surface water, soil or sediment do not exceed health-based levels, and either:

(3) Future releases will not occur, e.g., wastes have been removed from the unit; or

(4) A monitoring program approved by the Regional Administrator has been established.

5. The Permittee shall submit Acid and Industrial Sewer structural integrity reports according to the approved implementation schedule, permit condition II.B.2.b.
6. In lieu of permit conditions II.B.1 through 4, the Permittee may elect to proceed with a RCRA Facility Investigation for any or all of the identified SWMUs.

C. RCRA FACILITY INVESTIGATION

1. Within 180 calendar days of the effective date of this permit (or 120 calendar days after EPA's approval of a Verification Investigation Report which includes a recommendation for a RCRA Facility Investigation for any solid waste management unit) the Permittee shall submit to the Regional Administrator and the Virginia Department of ~~Waste Management~~ Environmental Quality a RCRA Facility Investigation (RFI) Work Plan. The plan must be approved by EPA in accordance with permit condition II.I., Submissions to Agency and Dispute Resolution, of this permit. This plan shall meet the objectives and requirements specified below:

The RFI objectives are to:

- a. Characterize the nature, extent, concentration and rate of migration of releases of hazardous waste or hazardous constituents from the SWMU(s) into groundwater, surface water, soil or any other media identified;
- b. Identify potential receptors;
- c. Provide a detailed geologic and hydrogeologic characterization of the area surrounding and underlying the SWMU(s); and
- d. Determine the need for and scope of corrective measures.

2. RCRA Facility Investigation Work Plan requirements:

- a. The Permittee shall provide a description of current conditions at the SWMU(s). Information submitted in a Verification Investigation Report need only be referenced. The following information shall be included:

(1) Topographic map(s) consistent with the requirements set forth in 40 CFR § 270.14(b)(19) of sufficient detail and accuracy to locate and report all current and future work performed at the site. The map(s) shall depict the following:

- (a) General geographic location;
- (b) Property lines, with the owners of all adjacent property clearly indicated;
- (c) The location of all known past solid or hazardous waste treatment, storage, or disposal areas and the site of all known spills, fires or other accidental release locations, including the approximate locations of any groundwater contamination plumes presently identified;
- (d) All known past and presently operating product and hazardous or solid waste underground tanks or piping; and
- (e) The location of all production and groundwater monitoring wells, whether or not they are associated with the particular SWMU under investigation. These wells shall be clearly labeled. Ground, top of casing and screened-interval elevations shall also be provided.

- b. Based on known preliminary information the Permittee shall identify the potential corrective measure technologies known that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of contamination. Also identify any field, laboratory, bench- or pilot-scale data that needs to be collected in the RFI to facilitate the evaluation and selection of the final corrective measure(s) (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of wastes, etc.).

- c. Project Management Plan.

The Permittee shall submit a Project Management Plan. The plan shall include a discussion of the technical strategy, schedules, budget, and personnel that will be available to

complete the study. The plan shall also include a description of the qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RFI.

d. RFI Sampling and Analysis Plan.

- (1) The Permittee shall submit a RFI Sampling and Analysis Plan for each solid waste management unit listed below. The plan shall provide for analysis of constituents released to the media identified from the following SWMUs. The plan shall provide for the analyses identified in Attachment A. All aqueous samples shall be analyzed for Total Organic Carbon and Total Organic Halogen and tested for pH. Also, any hazardous constituent not listed in Attachment A, that is known or suspected by the Permittee to have been treated, stored, disposed or contained in the unit, shall also be included for analysis. The following units shall be investigated:

SWMU NUMBER AND NAME	MEDIA	INVESTIGATE FOR
13. ✓ Waste Propellant Burning Ground		
Burning Pans; Former Open Ground Burning Area; Mobile, Temporary Storage Unit	Soil	Metals Semivolatiles Explosives
17. ✓ Contaminated Waste Burning [Air Curtain Destructor (ACD)]		
Stage and Burn Areas, ACD Staging Pad, Ash Staging Area, ACD Run- off Drainage Basin	Soil Surface Water Sediments	Metals Explosives
28. ✓ Sanitary Landfill	Groundwater	Metals Volatiles and Semivolatiles
51. ✓ TNT Neutralization Sludge Disposal	Groundwater	Metals Volatiles and Semivolatiles Explosives
52. ✓ Closed Sanitary Landfill	Groundwater	Metals Volatiles and Semivolatiles
AOC 0 ✓ Underground Fuel Oil Spill	Groundwater Soil	Volatiles and Semivolatiles

The Permittee may combine individual SWMUs into study areas.

- (2) The Sampling and Analysis Plan shall provide the rationale for the selection of sample locations and number of samples. The Permittee shall identify the specific sampling locations for each SWMU and for each affected environmental media.
- (3) The Permittee shall submit a Quality Assurance Plan, Sample Collection Methods and Procedures Plan, conform to the analytical requirements, and provide the Laboratory Deliverables as specified in Attachment B.
- (4) EPA and the Virginia Department of ~~Waste Management~~ Environmental Quality reserve the right to require split samples. Where split samples are taken and analyzed, EPA will provide the results to the Permittee for evaluation in the Verification RCRA Facility Investigation Report. The Permittee shall identify a procedure in the work plan for notifying both agencies of the sampling dates.
- (5) If any of the units contain hazardous wastes, the Permittee shall comply with applicable regulations including the Land Disposal Restrictions as contained in 40 CFR Part 268 and 52 FR 31138-31222 (August 17, 1988) and 54 FR 8264 (February 27, 1989). If soil, such as the cuttings from groundwater monitoring well installation, are contaminated with a listed hazardous waste or a characteristic waste then disposal is regulated by 40 CFR Part 268.

When groundwater or soil is contaminated by a listed waste, it is deemed to be a hazardous waste and is likewise regulated by 40 CFR Part 268.

e. Safety Plan.

The Permittee shall prepare and submit to EPA and the Virginia Department of ~~Waste Management~~ Environmental Quality a Safety Plan for each sampling activity. The Permittee shall consult appropriate guidance such as Standard Operating Safety Guides, USEPA, July 1988 (SOSG) and OSHA regulations at 29 CFR 1910 regarding the plan.

While EPA may comment on the Safety Plan, EPA will not approve or disapprove the plan.

f. Community Relations Plan.

The Permittee shall prepare a fact sheet describing the scope and objective of the field activities. This fact sheet shall be furnished to local officials or citizens should any inquiries be made about the field activities.

3. RCRA Facility Investigation.

The Permittee shall conduct the following investigations which are necessary to characterize the facility (Environmental Setting), define the degree and extent of contamination (Contamination Characterization) and identify actual or potential receptors.

The investigations must result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative(s) during the Corrective Measures Study. The Permittee shall follow the plans set forth in permit condition II.C.2.

a. Environmental Setting.

The Permittee shall collect information to supplement and verify existing information on the environmental setting at the facility. The Permittee shall characterize the following:

(1) Hydrogeology.

The Permittee shall conduct a program to evaluate the hydrogeologic conditions at the facility. The program shall provide the following information:

- (a) A description of the regional and site-specific geologic units beneath the facility, including:
 - (i) Stratigraphy: strike and dip, and identification of stratigraphic contacts;
 - (ii) Structural features: folding, fracturing, channeling, faulting, jointing; and
 - (iii) Soil: classification, description of appearance, and consistency.
- (b) A description of regional and site-specific hydrogeologic characteristics, including:
 - (i) Regional and facility specific groundwater flow patterns;

- (ii) A characterization of seasonal variations in the groundwater flow regime, including any perched groundwater zones;
- (iii) Identification and characterization of areas of recharge and discharge;
- (iv) An analysis of any topographic or geomorphic features that might influence the groundwater flow system; and
- (v) A description of the units including:
 - a) Hydraulic conductivity;
 - b) An interpretation of hydraulic interconnections between saturated zones, including any perched zones; and
 - c) Attenuation capacity and mechanisms of the soils (e.g., ion exchange capacity, organic carbon content, mineral content, etc.).
- (c) Using a topographic map as a base, and at least two approximately perpendicular geologic cross-sections for each unit(s) and the surrounding area, describe the extent (depth, thickness, lateral extent) of the geologic units including:
 - (i) Generalized soil (based on testing, grain size, water content, Atterburg limits, etc.) and rock profiles;
 - (ii) Encountered features such as faults, fractures, voids, stratum changes, lenses, pinch out zones, etc.;
 - (iii) Location and type of sampling including blow counts, percent recovery, etc.;
 - (iv) Location and type of in-situ testing performed (pressuremeter, packer permeability testing, slug tests, pump tests, etc.); and
 - (v) Groundwater elevation and/or potentiometric elevation.
- (d) A description of the facility site flow system including:

- (i) Water-level contour and/or potentiometric maps;
- (ii) The vertical and horizontal components of flow;
- (iii) Any temporal changes in water levels or hydraulic gradients, for example, due to tidal or seasonal influences;
- (iv) Active and inactive local water supply and production wells with an approximate schedule of pumping; and
- (v) Manmade hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention ponds, etc.).

(2) Soils.

The Permittee shall conduct a program to evaluate the soil conditions at the facility. The program shall provide the following information:

- (a) Where remediation by removal is the only option, provide map(s) and perpendicular cross sections showing:
 - (i) The extent of contamination;
 - (ii) Depth to groundwater; and
 - (iii) Unified Soil Classification System (USCS) (ASTM D 2487) and consistency.
- (b) Where remediation by removal is the likely option but it is necessary to determine the extent of migration (for example, to assess the mobility of wastes from an unlined surface impoundment or landfill) provide the following in addition to the requirements immediately above:
 - (i) Depth to bedrock and the characteristics of the bedrock including discontinuities such as faults, fissures, joints, fractures, sinkholes, etc.;
 - (ii) A detailed soil survey conducted according to USDA Soil Conservation Service (SCS) procedures including:

- a) USDA Textural Soil Classification and soil profiles showing stratifications or zones which may affect or direct the subsurface flow;
- b) Hydraulic conductivity and the SCS hydrologic group classification, A, B, C or D;
- c) Relative permeability (only if the waste may have changed the soil's hydraulic conductivity, such as concentrated organics);
- d) Storage capacity;
- e) Shrink-swell potential;
- f) Potential for contaminant transport via erosion, using the Universal Soil Loss Equation;
- g) Soil sorptive capacity;
- h) Cation exchange capacity;
- i) Soil organic content; and
- j) Soil pH.

(iii) The following contaminant characteristics must be included:

- a) Physical state;
- b) Viscosity;
- c) pH;
- d) pKa;
- e) Density;
- f) Water solubility;
- g) Henry's Law Constant;
- h) K_{ow} ;
- i) Biodegradability; and

- j) Rates of hydrolysis, photolysis and oxidation.
- (iv) When in-situ soil treatment will likely be the remediation, the following additional information must be provided:
 - a) Bulk density;
 - b) Porosity;
 - c) Grain size distribution;
 - d) Mineral content;
 - e) Soil moisture profile;
 - f) Unsaturated hydraulic conductivity;
 - g) Effect of stratification on unsaturated flow; and
 - h) Infiltration and evapotranspiration.

(3) Surface Water and Sediment.

The Permittee shall conduct a program to characterize the surface water bodies in the vicinity of the facility. Such characterization shall include, but not be limited to, the following activities and information:

- (a) Description of the temporal and permanent surface water bodies including:
 - (i) For lakes: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;
 - (ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;
 - (iii) For streams, ditches, and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100-year event);
 - (iv) Drainage patterns; and
 - (v) Evaporation.

- (b) Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients (NH_3 , $\text{NO}_3^-/\text{NO}_2^-$, PO_4^{3-}), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.
- (c) Description of sediment characteristics including:
 - (i) Deposition area;
 - (ii) Thickness profile; and
 - (iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.)

b. Contamination Characterization.

The Permittee shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Permittee shall address the following types of contamination at the facility:

(1) Groundwater Contamination.

The Permittee shall conduct a groundwater investigation to characterize any plumes of contamination at the facility. This investigation shall, at a minimum, provide the following information:

- (a) A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating at the facility;
- (b) The horizontal and vertical direction of contamination movement;
- (c) The velocity of contaminant movement;
- (d) An evaluation of factors influencing the plume movement; and

- (e) An extrapolation of future contaminant movement.

The Permittee shall document the procedures used to characterize contaminant plume(s), for example, geophysics, modeling, pump tests, slug tests, nested piezometers, etc.

(2) Soil Contamination.

The Permittee shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of the contaminant release. The investigation shall include the following information:

- (a) A description of the vertical and horizontal extent of contamination;
- (b) A description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, cation exchange capacity, biodegradability, hydrolysis, photolysis, oxidation, and other factors that might affect contaminant migration and transformation;
- (c) Specific contaminant concentrations;
- (d) The velocity and direction of contaminant movement; and
- (e) An extrapolation of future contaminant movement.

The Permittee shall document the procedures used in making the above determinations.

(3) Surface Water and Sediment Contamination.

The Permittee shall conduct a surface water investigation to characterize contamination in surface water bodies resulting from contaminant releases at the facility.

The investigation shall include, but not be limited to, the following information:

- (a) A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the facility, and the extent of contamination in underlying sediments;

- (b) The horizontal and vertical direction of contaminant movement;
- (c) The contaminant velocity;
- (d) An evaluation of the physical, biological, and chemical factors influencing contaminant movement;
- (e) An extrapolation of future contaminant movement; and
- (f) A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.

The Permittee shall document the procedures used in making the above determinations.

(4) Subsurface Gas Contamination.

The Permittee shall conduct an investigation to characterize subsurface gases emitted from buried hazardous waste or hazardous constituents. This investigation shall include the following information:

- (a) A description of the horizontal and vertical extent of subsurface gases migration;
- (b) The chemical composition of the gases being emitted;
- (c) The rate, amount, and density of the gases being emitted; and
- (d) Horizontal and vertical concentration profiles of the subsurface gases emitted.

The Permittee shall document the procedures used in making the above determinations.

c. Potential Receptors.

The Permittee shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the facility. Chemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be obtained.

- (1) The following characteristics shall be identified:

- (a) Local uses and possible future uses of ground-water:
 - (i) Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and
 - (ii) Location of groundwater users, including wells and discharge areas.
- (b) Local uses and possible future uses of surface waters draining the facility:
 - (i) Domestic and municipal (e.g., potable and lawn/garden watering);
 - (ii) Recreational (e.g., swimming, fishing);
 - (iii) Agricultural;
 - (iv) Industrial; and
 - (v) Environmental (e.g., fish and wildlife propagation).
- (c) Human use of or access to the facility and adjacent lands, including, but not limited to:
 - (i) Recreation;
 - (ii) Hunting;
 - (iii) Residential;
 - (iv) Commercial;
 - (v) Zoning; and
 - (vi) Relationship between population locations and prevailing wind direction.
- (d) A description of the biota in surface water bodies on, adjacent to, or affected by the facility.
- (e) A description of the ecology overlying and adjacent to the facility.
- (f) A demographic profile of the people who use or have access to the facility and adjacent land, including, but not limited to: age, sex, and sensitive subgroups.

- (g) A description of any endangered or threatened species near the facility.

4. Within 360 calendar days of EPA's approval of a RCRA Facility Investigation Work Plan, the Permittee shall fulfill the requirements of the RCRA Facility Investigation Work Plan and submit a RCRA Facility Investigation Report for EPA approval to EPA and the Virginia Department of ~~Waste Management~~ Environmental Quality. The Permittee shall also submit bi-monthly progress reports to EPA and the Virginia Department of ~~Waste Management~~ Environmental Quality beginning two months after EPA's approval of the work plan.

The RCRA Facility Investigation Report shall include an analysis and summary of all facility investigations and the results of such investigations. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and the environment, and to support the Corrective Measures Study.

a. Data Analysis.

The Permittee shall analyze all facility investigation data outlined in permit condition II.C.3, RCRA Facility Investigation, and prepare a report on the type and extent of contamination at the facility, including sources and migration pathways. The report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative of the area.

b. Protection Standards.

The Permittee shall identify protection standards as follows:

(1) Groundwater Protection Standards.

For regulated units the Permittee shall provide information to support the Agency's selection/development of Groundwater Protection Standards for all of the Appendix VIII constituents found in the groundwater during the RCRA Facility Investigation.

(a) The Groundwater Protection Standards shall consist of:

- (i) The Maximum Contaminant Level (MCL) for any constituents with an EPA promulgated Maximum Contaminant Level (MCL), if the

background level of the constituent is below the value of the EPA approved MCL; or

(ii) The background level of that constituent in the groundwater; or

(iii) An EPA approved Alternate Concentration Limit (ACL).

(b) Information to support the EPA's selection of Alternate Concentration Limits (ACLs) shall be developed by the Permittee in accordance with applicable EPA guidance. For any proposed ACLs the Permittee shall include a justification based upon the criteria set forth in 40 CFR § 264.94(b).

(c) Any proposed ACLs, are subject to EPA's approval according to the procedures contained in permit condition II.I., Submissions to Agency and Dispute Resolution.

(2) Other Relevant Protection Standards.

The Permittee shall identify all relevant and applicable standards for the protection of human health and the environment (e.g., National Ambient Air Quality Standards, Federally-approved state water quality standards, etc.).

c. The Permittee shall recommend which SWMUs require a Corrective Measures Study. The Permittee shall also identify those corrective action alternative(s) the Permittee intends to investigate further. The Permittee may either investigate several alternatives or focus on a limited number of alternatives. A schedule for completing the Corrective Measures Study shall be included.

D. CORRECTIVE MEASURES STUDY

The purpose of this Corrective Measures Study (CMS) is to develop and evaluate the corrective action alternative(s) and to recommend the corrective measure(s) to be taken.

The Corrective Measures Study consists of the following:

1. The Permittee may elect to screen a number of corrective action alternatives. Any corrective action alternative(s) specified in EPA's approval of the RFI Report shall also be screened. Screening is intended to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to

perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period.

- a. The characteristics which are used to screen inapplicable technologies include, but are not limited, to the following:

(1) Site Characteristics.

Site data shall be reviewed to identify conditions that may limit or promote the use of certain technologies. The use of technologies which are clearly precluded by site characteristics shall be eliminated from further consideration;

(2) Waste Characteristics.

Waste characteristics particularly affect the feasibility of remediating waste by utilizing in-situ methods, direct treatment methods, or land disposal (on- or off-site) methods. Therefore, identification of waste characteristics that limit the effectiveness or feasibility of remediating technologies is an important part of the screening process. Remediating technologies clearly limited by these waste characteristics should be eliminated from consideration; and

(3) Technology Limitations.

During the screening process, the level of technological development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

- b. The Permittee shall select corrective measure alternative(s) based on the above screening, together with any corrective measures alternative(s) specified by EPA, for further evaluation. Should an EPA specified corrective measure alternative(s) prove infeasible based on the above screening, the Permittee may request that the alternative(s) be dropped from further investigation. However, until approved, the request shall not stay the conditions of this permit.
- c. In lieu of permit condition II.D.1, the Permittee may elect to fulfill permit condition II.D.2.

2. The Permittee shall evaluate the selected corrective measure alternative(s), including any specified by EPA.

The evaluation shall include a description of each corrective measure alternative which includes, but is not limited to, the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. The alternative shall be evaluated with respect to the following:

- a. Technical: the alternative shall be evaluated with respect to:

- (1) Performance - based on the effectiveness and useful life of the alternative(s);
- (2) Reliability - including operation and maintenance requirements and demonstrated reliability;
- (3) Implementability - including the relative ease of installation (constructability) and the time required to achieve a given level of response; and
- (4) Safety - including threats to the safety of nearby communities and environments, and worker safety.

- b. Environmental: an assessment shall focus on the facility conditions and pathways of contamination actually addressed by each alternative. The assessment shall include the short- and long-term beneficial and adverse effects, any adverse effects on environmentally sensitive areas, and an analysis of measures to mitigate adverse effects.

- c. Human health: the alternative(s) shall be assessed with respect to mitigation of short- and long-term potential exposure to any residual contamination and protection of human health, both during and after implementation.

- d. Institutional: the Permittee shall address the effects of federal, state, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations, including the requirements for construction and operating permits on the design, operation, and timing of the alternative(s).

3. The Permittee shall develop a cost estimate for the alternative(s) and for each phase or segment of the alternative(s) including:

- a. Capital costs consisting of direct (construction) and indirect (non-construction and overhead) costs; and

- b. Post-construction costs, including operation and maintenance) necessary to ensure continued effectiveness of the alternative(s).
4. The Permittee shall submit bi-monthly progress reports containing:
- a. A description and estimate of the percentage of the CMS completed;
 - b. Summaries of all findings;
 - c. Summaries of all changes made in the CMS during the reporting period;
 - d. Summaries of all contacts with representatives of the local community, public interest groups, or state government during the reporting period;
 - e. Summaries of all problems or potential problems encountered during the reporting period;
 - f. Actions being taken to rectify problems;
 - g. Changes in personnel during the reporting period;
 - h. Projected work for the next reporting period; and
 - i. A description and estimate of the percentage of the CMS completed.
5. According to the approved schedule, the Permittee shall submit for EPA approval a Corrective Measures Study Report to EPA and the Virginia Department of ~~Waste Management~~ Environmental Quality. The report shall include:
- a. An update to the information describing the current situation at the facility and the nature and extent of the contamination as documented by the RCRA Facility Investigation Report. The Permittee shall update the information with respect to any response activities or interim measures which have or are being implemented at the facility;
 - b. A recommendation for site-specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RCRA Facility Investigation, EPA guidance, and the requirements of any applicable federal statutes or regulations;

- c. The Permittee shall justify and recommend a corrective measure alternative(s) using technical, human health, and environmental criteria. These recommendations shall include summary tables which allow the alternative(s) to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors among the alternatives evaluated shall be highlighted. Information on all evaluated corrective measure alternative(s) shall be presented; and
- d. The Report shall, at a minimum, include:
- (1) A description of the facility, site topographic map(s) and preliminary layouts;
 - (2) For the selected corrective measure alternative(s) include:
 - (a) Performance expectations;
 - (b) Preliminary design criteria and rationale;
 - (c) General operation and maintenance requirements;
 - (d) Long-term monitoring requirements;
 - (e) Design and Implementation Precautions:
 - (i) Special technical problems;
 - (ii) Additional engineering data required;
 - (iii) Permits and regulatory requirements;
 - (iv) Access, easements, right-of-way;
 - (v) Health and safety requirements; and
 - (vi) Community relations activities; and
 - (f) Cost Estimates and Schedules:
 - (i) Capital cost estimate;
 - (ii) Operation and maintenance cost estimate; and
 - (iii) Project schedule (design, construction, operation).

E. CORRECTIVE MEASURES DESIGN

The Permittee shall prepare final construction plans and specifications to implement the corrective measure(s) at the facility as defined in the Corrective Measures Study.

1. Design Plans and Specifications.

The Permittee shall develop clear and comprehensive design plans and specifications which include but are not limited to the following:

- a. Discussion of the design strategy and the design basis, including:
 - (1) Compliance with all applicable or relevant environmental and public health standards; and
 - (2) Minimization of environmental and public health impacts.
- b. Discussion of the technical factors of importance including:
 - (1) Use of currently accepted environmental control measures and technology;
 - (2) The constructability of the design; and
 - (3) Use of currently acceptable construction practices and techniques.
- c. Description of assumptions made and detailed justification of these assumptions;
- d. Discussion of the possible sources of error and references to possible operation and maintenance problems;
- e. Detailed drawings of the proposed design;
- f. Tables listing equipment and specifications;
- g. Appendices including:
 - (1) Sample calculations (one example presented and explained clearly for significant or unique design calculations);
 - (2) Derivation of equations essential to understanding the report; and
 - (3) Results of laboratory or field tests.

2. Operation and Maintenance Plan.

The Permittee shall prepare an Operation and Maintenance Plan to cover both implementation and long-term maintenance of the corrective measure. The draft Operation and Maintenance Plan shall be submitted simultaneously with the Preliminary Design Document submission, and the Final Operation and Maintenance Plan with the Final Design documents.

The plan shall be composed of the following elements:

- a. Description of normal operation and maintenance (O&M):
 - (1) Description of tasks for operation;
 - (2) Description of tasks for maintenance;
 - (3) Description of prescribed treatment or operation conditions; and
 - (4) Schedule showing frequency of each O&M task.
- b. Description of potential operating problems:
 - (1) Description and analysis of potential operation problems;
 - (2) Sources of information regarding problems; and
 - (3) Common and/or anticipated remedies.
- c. Description of routine monitoring and laboratory testing:
 - (1) Description of monitoring tasks;
 - (2) Description of required laboratory tests and their interpretation;
 - (3) Required quality assurance program; and
 - (4) Schedule of monitoring frequency and date, if appropriate, when monitoring may cease.
- d. Description of alternate O&M:
 - (1) Should systems fail, alternate procedures to prevent undue hazard; and
 - (2) Analysis of vulnerability and additional resource requirements should a failure occur.

e. Safety plan:

- (1) Description of precautions, of necessary equipment, etc., for site personnel; and
- (2) Safety tasks required in event of systems failure.

f. Description of equipment:

- (1) Equipment identification;
- (2) Installation of monitoring components;
- (3) Maintenance of site equipment; and
- (4) Replacement schedule for equipment and installed components.

g. Records and reporting mechanisms required.

- (1) Daily operating logs;
- (2) Laboratory records;
- (3) Records for operating costs;
- (4) Mechanism for reporting emergencies;
- (5) Personnel and maintenance records; and
- (6) Monthly/annual reports to State agencies.

3. Cost Estimate.

The Permittee shall develop cost estimates. The cost estimate developed in the Corrective Measures Study shall be refined to reflect the more detailed/accurate design plans and specifications being developed. The cost estimate shall include both capital and operation and maintenance costs.

4. Construction Quality Assurance Objectives.

The Permittee shall identify and document the objectives and framework for the development of a construction quality assurance program including, but not limited to the following: responsibility and authority; personnel qualifications; inspection activities; sampling requirements; and documentation.

5. Health and Safety Plan.

The Permittee shall modify the Health Safety Plan developed for the RCRA Facility Investigation to address the activities to be

performed at the facility to implement the corrective measure(s).

6. Design Phases.

The design of the corrective measure(s) should include the phases outlined below.

a. Preliminary design.

The Permittee shall submit the Preliminary design when the design effort is approximately 50% complete. The preliminary design shall reflect a level of effort such that the technical requirements of the project have been addressed and outlined so that they may be reviewed to determine if the final design will provide an operable and usable corrective measure. Supporting data and documentation shall be provided with the design documents defining the functional aspects of the program. The preliminary construction drawings by the Permittee shall reflect organization and clarity. The scope of the technical specifications shall be outlined in a manner reflecting the final specifications. The Permittee shall include with the preliminary submission design calculations reflecting the same percentage of completion as the designs they support.

b. Equipment start-up and operator training.

The Permittee shall prepare, and include in the technical specifications governing treatment systems, contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start-up and operation of the treatment systems, and training covering appropriate operational procedures once the start-up has been successfully accomplished.

c. Final Design.

The Permittee shall execute the required revisions and submit the final documents 100% complete with reproducible drawings and specifications.

The final design submittal shall consist of the Final Design Plans and Specifications (100% complete, thoroughly reviewed for completeness and accuracy), the Permittee's Final Construction Cost Estimate, the Final Draft Operation and Maintenance Plan, Final Quality Assurance Plan, Final Project Schedule, and Final Health and Safety Plan specifications. The quality of the design documents should be such that the Permittee would be able to include them in

a bid package and invite contractors to submit bids for the construction project.

F. CORRECTIVE MEASURE IMPLEMENTATION

Prior to implementation of the selected corrective measure, the Regional Administrator shall modify the permit according to procedures in permit condition II.J., Permit Modification.

G. GUIDANCE DOCUMENTS

In addition to guidance documents identified elsewhere in this permit or attachments, the following documents shall be referred to as appropriate:

- a. U.S. EPA, May 1978 (Rev. May 1986), NEIC Policies and Procedures, Office of Enforcement and Compliance Monitoring, National Enforcement Investigations Center. EPA-330/9-78-001-R, Denver, Colorado, 80225;
- b. U.S. EPA, March 1987, Data Quality Objectives for Remedial Response Activities, Volume 1: Development Process, Volume 2: Example Scenario, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement. EPA 540/6-87/003a, OSWER Directive No. 9335.0-7B;
- c. U.S. EPA, September 1986, RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, Office of Waste Programs Enforcement and Office of Solid Waste and Emergency Response, OSWER Directive No. 9950.1;
- d. U.S. EPA, October 1986, RCRA Facility Assessment Guidance, Office of Solid Waste, OSWER Directive No. 9502.00-5;
- e. U.S. EPA, May 1989, Interim Final RCRA Facility Investigation (RFI) Guidance, Volumes I - IV, Office of Solid Waste, OSWER Directive No. 9502.006D; and
- f. Any future EPA guidance regarding Corrective Measure Studies, Design or Implementation.

H. INTERIM MEASURES

1. If, at any time during the term of this permit, the Permittee discovers that releases of hazardous waste or hazardous constituents are then affecting or will affect target populations or sensitive environments the Permittee shall:
 - a. Submit the following information concerning the release:
 - (1) The source(s), amount(s) and location(s);

- (2) The concentration(s) of hazardous waste or hazardous constituents and, if known, the background level of each hazardous waste or hazardous constituent;
 - (3) The known or expected pathway through which the contamination is migrating or may migrate; the extent, rate, direction of contamination; and estimated quantities and/or volumes released; and
 - (4) The projected fate and transport to the extent known.
 - b. Without doing either a risk assessment or an endangerment assessment identify the following:
 - (1) The exposure pathway(s) (e.g., air, fire/explosion, groundwater, surface water, contact, ingestion);
 - (2) The location and demographics of populations potentially at risk from exposure;
 - (3) The potential effects of human exposure (short- and long-term effects);
 - (4) Has and how has human exposure actually occurred or when and how may human exposure occur; and
 - (5) If response is delayed, how will the situation change.
 - c. Identify potential environmental exposure and threats such as:
 - (1) What media have been and may be contaminated (e.g., groundwater, air, surface water);
 - (2) The likely short-term and long-term threats and effects on the environment; and
 - (3) If response is delayed, how the situation will change?
 - d. An outline of proposed interim measures to temporarily or permanently arrest the release, and which are expected to be a necessary component of the final remedy.
2. If EPA determines that a high priority release from a SWMU posing a threat to human health or the environment has occurred or is imminent, the Permittee may be required to implement interim measures. Such a requirement may result in a permit modification.

I. SUBMISSIONS TO AGENCY AND DISPUTE RESOLUTION

1. The Permittee shall submit to the Regional Administrator at least three copies of any submittal required by EPA's portion of this permit. All submittals shall be signed and certified pursuant to 40 CFR §§ 270.11 and 270.30(k).
2. All plans, reports, and schedules required by the terms of this permit are, upon approval by EPA, incorporated into this permit. Any noncompliance with such approved plans, reports, or schedules shall be deemed noncompliance with this permit. In the event of unforeseen circumstances beyond the control of the Permittee which could not be overcome by due diligence, the Permittee may request a change, subject to EPA approval, in the previously approved plans, reports, or schedules. This request may result in a major or minor modification of the permit.
3. In the event of Agency disapproval in whole or in part of any plan or report required by this permit, EPA shall specify any deficiencies in writing. The Permittee shall modify the plan, schedule, report or other submission to correct the deficiencies within 30 calendar days from receipt of disapproval by EPA. The modified plan or report shall be submitted to EPA in writing for review. Should the Permittee take exception to all or part of EPA's disapproval, the Permittee shall submit to EPA a written statement of grounds for the exception within 15 calendar days from receipt of disapproval by EPA. Representatives of EPA and the Permittee may confer in person or by telephone in an attempt to resolve any disagreement. In the event that resolution is not reached within 45 calendar days from receipt of disapproval by EPA the Permittee shall revise the plan, schedule, report or other submission as required by EPA and resubmit the plan, schedule, report or other submission by the date required by EPA. The Permittee, upon submission of the revised plan, schedule, report or submission shall state whether or not it agrees in whole or in part with such plan or report. In the event of any disagreement, EPA shall modify the permit in accordance with 40 CFR § 270.41, 53 FR 37912, 37936-37942 (September 28, 1988).

J. PERMIT MODIFICATION

The Regional Administrator will modify the permit in accordance with 40 CFR § 270.41, 53 FR 37912, 37936-37942 (September 28, 1988) and Section 3005(c) of RCRA, in the event that investigations required in this permit, or any other information available to the Regional Administrator, identifies solid waste management units that require corrective measures. This provision does not limit EPA's authority to otherwise modify this permit in accordance with 40 CFR Part 270, Subpart D.

K. CERTIFICATION OF WASTE MINIMIZATION

The Permittee shall maintain a certification at the facility containing the information required by 40 CFR § 264.73(b)(9).

L. RECORDKEEPING AND REPORTING

The Permittee shall maintain a written operating record at the facility in accordance with 40 CFR § 264.73(b)(9) [waste minimization].

PART III - HAZARDOUS WASTE INCINERATORS

Section 3005(c)(3) of RCRA (Section 212 of HSWA), codified as 40 CFR § 270.32(b)(2), authorizes EPA to establish any term or condition in the permit determined necessary to protect human health and the environment.

- A. The Permittee shall control the total feed of hazardous metals to the incinerator system as specified below. The allowable feed rates apply to the combined total of all feeds to both incinerators, regardless of whether they are specifically regulated as RCRA hazardous wastes, and to all chemical forms of the listed metals.

<u>Metal</u>	Maximum Feed Rate (pounds per hour)
Antimony	0.052
Barium	21.
Lead	0.016 ¹ <u>3.2</u> ²
Mercury	0.052
<u>Nickel</u>	<u>2.3</u>
<u>Selenium</u>	<u>0.52</u>
Silver	7.8
Thallium	0.052

- B. For the following metals only, the maximum feed rate of all four metals shall be set such that:

$$\sum_{i=1}^n \frac{w_i}{A_i} \leq 1.0$$

where: w_i = the actual feed rate of the i th metal constituent

A_i = the allowable feed rate of the i th constituent (specified below)

n = the number of these metals present in the total incinerator feed

¹Original Text

²Modified Text

<u>Metal</u>	<u>Maximum Feed Rate (pounds per hour)</u>
Arsenic	0.00040
Beryllium	0.018
Cadmium	0.00097
Chromium	0.0035

- C. The total feed rate to the incinerator feed distribution system of chlorine in any chemical form shall not exceed 29 pounds per hour.
- D. ~~Within 60 calendar days after the effective date of this permit, the Permittee shall submit for EPA approval a detailed waste management plan that is sufficient to ensure compliance with the feed limitations specified above. The plan shall include, but is not limited to:~~
- ~~1. Waste sampling and analysis techniques and frequencies,~~
 - ~~2. Management procedures, including quality control methods, to ensure that constituent feed rates listed above will not be exceeded at any time, and~~
 - ~~3. Record keeping practices.~~

The Permittee shall continuously monitor each constituent feed rate at all times when hazardous waste is burned in the incinerators. The Permittee shall maintain records which document those rates. Constituent feed rates shall be monitored in accordance with the facility's waste analysis plan, Attachment BB.

November 8, 1989
Date Signed

(signed)

Stephen R. Wassersug, Director
Hazardous Waste Management Division

2/24/95
Date/Modification Signed

Christopher B. Bell

Maria Parisi Vickers
Associate Division Director
Office of RCRA Programs
Hazardous Waste Management Division

VOLATILES & SEMIVOLATILES

HAZARDOUS CONSTITUENT	CAS NO.	HBN SOIL mg/kg	HBN WATER mg/l	PQL SOIL mg/kg	PQL WATER mg/l	SUGGESTED METHOD
Acetone	67-64-1	1E+3	4E0	1E-1	1E-1	8240
Acrolein	107-02-8	1E+3	5E-2	5E-3	5E-3	8240
Acrylonitrile	107-13-1	1E0	6E-5	5E-3	5E-3	8240
Benzene	71-43-2	2E+1	5E-3	5E-3	5E-3	8260 (8240)
Bis(2-chloroethoxy) methane *syn.* Dichloromethoxy ethane	111-91-1			3E-1	1E-2	8270
Bis(2-chloroethyl) ether *syn.* Dichloroethyl ether	111-44-4	6E-1	3E-5	3E-1	1E-2	8270
Bis(2-chloroisopropyl) ether *syn.* Dichloroisopropyl ether	108-60-1	9E+1	4E-2	3E-1	1E-2	8270
Bis(2-ethylhexyl) phthalate *syn.* Diethylhexyl phthalate	117-81-7	5E+1	3E-3	3E-1	1E-2	8270
Bromodichloromethane	75-27-4	1E+3	7E-1	5E-3	5E-3	8260 (8240)
Bromoform *syn.* Tribromomethane	75-25-2	1E+3	7E-1	5E-3	5E-3	8260 (8240)
4-Bromophenyl phenyl ether	101-55-3			3E-1	1E-2	8270
Butyl benzyl phthalate	85-68-7	1E+3	9E0	3E-1	1E-2	8270
Carbon disulfide	75-15-0	1E+3	4E0	5E-3	5E-3	8240
Carbon tetrachloride	56-23-5	5E+1	5E-3	5E-3	5E-3	8240
p-Chloroaniline	106-47-8	3E+2	1E-1	3E-1	1E-2	8270
Chlorobenzene	108-90-7	1E+3	1E0	5E-3	5E-3	8260 (8240)
p-Chloro-m-cresol	59-50-7	1E+3	2E-1	3E-1	1E-2	8270
Chloroethane *syn.* Ethyl chloride	75-00-3			1E-2	1E-2	8240
Chloroform	67-66-3	1E+2	6E-1	5E-3	5E-3	8260
2-Chloronaphthalene	91-58-7			3E-1	1E-2	8270
2-Chlorophenol	95-57-8	4E+2	2E-1	3E-1	1E-2	8270
m-Cresol	108-39-4	1E+3	2E0	3E-1	1E-2	8270
o-Cresol	95-48-7	1E+3	2E0	3E-1	1E-2	8270
p-Cresol	106-44-5	1E+3	2E0	3E-1	1E-2	8270
Di-n-butyl phthalate	84-74-2	1E+3	4E0	3E-1	1E-2	8270
o-Dichlorobenzene	95-50-1	1E+3	3E0	1E-2	1E-2	8260 (8270)
m-Dichlorobenzene	541-73-1	1E+3	3E0	5E-3	5E-3	8260 (8270)
p-Dichlorobenzene	106-46-7	4E+2	7.5E-2	5E-3	5E-3	8260 (8270)
3,3'-Dichlorobenzidine	91-94-1	2E0	8E-5	1E0	2E-2	8270
Dichlorodifluoromethane	75-71-8	1E+3	7E0	5E-3	5E-3	8260 (8240)
1,1-Dichloroethane	75-34-3	8E0	4E-4	5E-3	5E-3	8260 (8240)
1,2-Dichloroethane	107-06-2	8E0	5E-3	5E-3	5E-3	8260 (8240)
1,1-Dichloroethylene	75-35-4	1E+1	7E-3	5E-3	5E-3	8260 (8240)
trans-1,2-Dichloroethylene	156-60-5	1E+3	7E-1	5E-3	5E-3	8260 (8240)
2,4-Dichlorophenol	120-83-2	2E+2	1E-1	3E-1	1E-2	8270
1,2-Dichloropropane	78-87-5	1E+2	6E-3	5E-3	5E-3	8260 (8240)
cis-1,3-Dichloropropene	10061-01-5	4E0	2E-4	1E-2	1E-2	8240
trans-1,3-Dichloropropene	10061-02-6	4E0	2E-4	1E-2	1E-2	8240
Diethyl phthalate	84-66-2	1E+3	3E+1	3E-1	1E-2	8270
2,4-Dimethylphenol	105-67-9	4E+2	2E-2	3E-1	1E-2	8270
Dimethyl phthalate	131-11-3	1E+3	4E+2	3E-1	1E-2	8270
4,6-Dinitro-o-cresol	534-52-1	8E+1	4E-2	5E0	5E-2	8270
2,4-Dinitrophenol	51-28-5	2E+2	7E-2	2E0	5E-2	8270
2,4-Dinitrotoluene	121-14-2	1E0	5E-5	3E-1	1E-2	8270
2,6-Dinitrotoluene	606-20-2			3E-1	1E-2	8270
Di-n-octyl phthalate	117-84-0			3E-1	1E-2	8270
Ethylbenzene	100-41-4	1E+3	4E0	5E-3	5E-3	8260 (8240)
Hexachlorobenzene	118-74-1	4E-1	2E-5	3E-1	1E-2	8270
Hexachlorobutadiene	87-68-3	9E+1	5E-3	5E-3	5E-3	8260 (8120)

HBN = Health Based Number
PQL = Practical Quantitation Limit

VOLATILES & SEMIVOLATILES (Continued)

HAZARDOUS CONSTITUENT	CAS NO.	HBN SOIL mg/kg	HBN WATER mg/l	PQL SOIL mg/kg	PQL WATER mg/l	SUGGESTED METHOD
Hexachlorocyclopentadiene	77-47-4	6E+2	2E-1	3E-1	1E-2	8270
Hexachloroethane	67-72-1	8E+1	3E-1	3E-1	1E-2	8270
Methyl bromide *syn.* Bromomethane	74-83-9	1E+2	5E-2	1E-2	1E-2	8260 (8240)
Methyl chloride *syn.* Chloromethane	74-87-3	5E+2	3E-2	1E-2	1E-2	8260 (8240)
Methylene chloride *syn.* Dichloromethane	75-09-2	9E+1	5E-3	5E-3	5E-3	8240
Methyl ethyl ketone *syn.* 2-Butanone	78-93-3	1E+3	2E0	1E-1	1E-1	8240
Methyl isobutyl ketone *syn.* 4-Methyl-2-pentanone	108-10-1	1E+3	2E0	1E-1	1E-1	8240
Naphthalene	91-20-3	1E+3	1E+1	3E-1	1E-2	8270
p-Nitroaniline	100-01-6			1E0	2E-2	8270
Nitrobenzene	98-95-3	4E+1	2E-2	3E-1	1E-2	8270
p-Nitrophenol	100-02-7			3E0	5E-2	8270
N-Nitrosodiphenylamine	86-30-6	1E+2	7E-3	3E-1	1E-2	8270
N-Nitrosodi-n-propylamine	621-64-7	1E-1	5E-6	3E-1	1E-2	8270
Pentachlorophenol	87-86-5	1E+3	1E0	2E0	5E-2	8270
Phenol	108-95-2	1E+3	2E+1	3E-1	1E-2	8270
Pyrene	129-00-0	1E+3	4E0	3E-1	1E-2	8270
1,1,1,2-Tetrachloroethane	630-20-6	3E+2	1E-2	5E-3	5E-3	8260 (8240)
1,1,2,2-Tetrachloroethane	79-34-5	4E+1	2E-3	5E-3	5E-3	8260 (8240)
Tetrachloroethylene	127-18-4	1E+2	7E-3	5E-3	5E-3	8260 (8240)
Toluene	108-88-3	1E+3	1E+1	5E-3	5E-3	8260 (8240)
1,2,4-Trichlorobenzene	120-82-1	1E+3	7E-1	1E-2	1E-2	8260 (8270)
1,1,1-Trichloroethane	71-55-6	1E+3	2E-1	5E-3	5E-3	8260 (8240)
1,1,2-Trichloroethane	79-00-5	1E+2	6E-3	5E-3	5E-3	8260 (8240)
Trichloroethylene	79-01-6	6E+1	5E-3	5E-3	5E-3	8260 (8240)
Trichlorofluoromethane	75-69-4	1E+3	1E+1	5E-3	5E-3	8260 (8240)
2,4,5-Trichlorophenol	95-95-4	1E+3	4E0	2E0	5E-2	8270
2,4,6-Trichlorophenol	88-06-2	4E+1	2E-3	6E-1	1E-2	8270
Vinyl chloride	75-01-4	3E-1	2E-3	1E-2	1E-2	8240
Xylene (total)	1330-20-7	1E+3	7E+1	5E-3	5E-3	8260 (8240)

VOLATILES & SEMIVOLATILES, LIST 2

HAZARDOUS CONSTITUENT	CAS NO.	HBN SOIL mg/kg	HBN WATER mg/l	PQL SOIL mg/kg	PQL WATER mg/l	SUGGESTED METHOD
Acetone	67-64-1	1E+3	4E0	1E-1	1E-1	8240
Acrolein	107-02-8	1E+3	5E-2	5E-3	5E-3	8240
Acrylonitrile	107-13-1	1E0	6E-5	5E-3	5E-3	8240
Anthracene	120-12-7	4E+1	2E-3	1E-1	2E-3	8310
Benzene	71-43-2	2E+1	5E-3	5E-3	5E-3	8260 (8240)
Benzo[<i>a</i>]anthracene	56-55-3	2E-1	1E-5	9E-3	1E-4	8310
Benzo[<i>b</i>]fluoranthene	205-99-2	4E-1	2E-5	2E-2	2E-4	8310
Benzo[<i>k</i>]fluoranthene	207-08-9	8E+1	4E-3	2E-2	2E-4	8310
Benzo[<i>a</i>]pyrene	50-32-8	6E-2	3E-6	2E-2	2E-4	8310
Bis(2-chloroethoxy) ethane *syn.* Dichloroethoxy ethane	111-91-1			3E-1	1E-2	8270
Bis(2-chloroethyl) ether *syn.* Dichloroethyl ether	111-44-4	6E-1	3E-5	3E-1	1E-2	8270
Bis(2-chloroisopropyl) ether *syn.* Dichloroisopropyl ether	108-60-1	9E+1	4E-2	3E-1	1E-2	8270
Bis(2-ethylhexyl) phthalate *syn.* Diethylhexyl phthalate	117-81-7	5E+1	3E-3	3E-1	1E-2	8270
Bromodichloromethane	75-27-4	1E+3	7E-1	5E-3	5E-3	8260 (8240)
Bromoform *syn.* Tribromomethane	75-25-2	1E+3	7E-1	5E-3	5E-3	8260 (8240)
4-Bromophenyl phenyl ether	101-55-3			3E-1	1E-2	8270
Butyl benzyl phthalate	85-68-7	1E+3	9E0	3E-1	1E-2	8270
Carbon disulfide	75-15-0	1E+3	4E0	5E-3	5E-3	8240
Carbon tetrachloride	56-23-5	5E+1	5E-3	5E-3	5E-3	8240
p-Chloroaniline	106-47-8	3E+2	1E-1	3E-1	1E-2	8270
Chlorobenzene	108-90-7	1E+3	1E0	5E-3	5E-3	8260 (8240)
p-Chloro- <i>m</i> -cresol	59-50-7	1E+3	2E-1	3E-1	1E-2	8270
Chloroethane *syn.* Ethyl chloride	75-00-3			1E-2	1E-2	8240
Chloroform	67-66-3	1E+2	6E-1	5E-3	5E-3	8260
2-Chloronaphthalene	91-58-7			3E-1	1E-2	8270
2-Chlorophenol	95-57-8	4E+2	2E-1	3E-1	1E-2	8270
Chrysene	218-01-9	4E0	2E-4	2E-2	2E-3	8310
<i>m</i> -Cresol	108-39-4	1E+3	2E0	3E-1	1E-2	8270
<i>o</i> -Cresol	95-48-7	1E+3	2E0	3E-1	1E-2	8270
<i>p</i> -Cresol	106-44-5	1E+3	2E0	3E-1	1E-2	8270
Dibenz[<i>a,h</i>]anthracene	53-70-3	1E-2	7E-7	2E-2	3E-4	8310
Di- <i>n</i> -butyl phthalate	84-74-2	1E+3	4E0	3E-1	1E-2	8270
<i>o</i> -Dichlorobenzene	95-50-1	1E+3	3E0	1E-2	1E-2	8260 (8270)
<i>m</i> -Dichlorobenzene	541-73-1	1E+3	3E0	5E-3	5E-3	8260 (8270)
<i>p</i> -Dichlorobenzene	106-46-7	4E+2	7.5E-2	5E-3	5E-3	8260 (8270)
3,3'-Dichlorobenzidine	91-94-1	2E0	8E-5	1E0	2E-2	8270
Dichlorodifluoromethane	75-71-8	1E+3	7E0	5E-3	5E-3	8260 (8240)
1,1-Dichloroethane	75-34-3	8E0	4E-4	5E-3	5E-3	8260 (8240)
1,2-Dichloroethane	107-06-2	8E0	5E-3	5E-3	5E-3	8260 (8240)
1,1-Dichloroethylene	75-35-4	1E+1	7E-3	5E-3	5E-3	8260 (8240)
trans-1,2-Dichloroethylene	156-60-5	1E+3	7E-1	5E-3	5E-3	8260 (8240)
2,4-Dichlorophenol	120-83-2	2E+2	1E-1	3E-1	1E-2	8270
1,2-Dichloropropane	78-87-5	1E+2	6E-3	5E-3	5E-3	8260 (8240)
cis-1,3-Dichloropropene	10061-01-5	4E0	2E-4	1E-2	1E-2	8240
trans-1,3-Dichloropropene	10061-02-6	4E0	2E-4	1E-2	1E-2	8240
Diethyl phthalate	84-66-2	1E+3	3E+1	3E-1	1E-2	8270
2,4-Dimethylphenol	105-67-9	4E+2	2E-2	3E-1	1E-2	8270
Dimethyl phthalate	131-11-3	1E+3	4E+2	3E-1	1E-2	8270
4,6-Dinitro- <i>o</i> -cresol	534-52-1	8E+1	4E-2	5E0	5E-2	8270

VOLATILES & SEMIVOLATILES, LIST 2 (Continued)

HAZARDOUS CONSTITUENT	CAS NO.	HBN SOIL mg/kg	HBN WATER mg/l	PQL SOIL mg/kg	PQL WATER mg/l	SUGGESTED METHOD
2,4-Dinitrophenol	51-28-5	2E+2	7E-2	2E0	5E-2	8270
2,4-Dinitrotoluene	121-14-2	1E0	5E-5	3E-1	1E-2	8270
2,6-Dinitrotoluene	606-20-2			3E-1	1E-2	8270
Di-n-octyl phthalate	117-84-0			3E-1	1E-2	8270
Ethylbenzene	100-41-4	1E+3	4E0	5E-3	5E-3	8260 (8240)
Fluoranthene	206-44-0	5E+2	2E-1	3E-1	1E-2	8270
Hexachlorobenzene	118-74-1	4E-1	2E-5	3E-2	5E-4	8120
Hexachlorobutadiene	87-68-3	9E+1	5E-3	5E-3	5E-3	8260 (8120)
Hexachlorocyclopentadiene	77-47-4	6E+2	2E-1	3E-1	1E-2	8270
Hexachloroethane	67-72-1	8E+1	3E-1	3E-1	1E-2	8270
Indeno[1,2,3-cd]pyrene	193-39-5	4E+1	2E-3	3E-2	4E-4	8310
Methyl bromide *syn.* Bromomethane	74-83-9	1E+2	5E-2	1E-2	1E-2	8260 (8240)
Methyl chloride *syn.* Chloromethane	74-87-3	5E+2	3E-2	1E-2	1E-2	8260 (8240)
Methylene chloride *syn.* Dichloromethane	75-09-2	9E+1	5E-3	5E-3	5E-3	8240
Methyl ethyl ketone *syn.* 2-Butanone	78-93-3	1E+3	2E0	1E-1	1E-1	8240
Methyl isobutyl ketone *syn.* 4-Methyl-2-pentanone	108-10-1	1E+3	2E0	1E-1	1E-1	8240
Naphthalene	91-20-3	1E+3	1E+1	5E-3	5E-3	8260
p-Nitroaniline	100-01-6			1E0	2E-2	8270
Nitrobenzene	98-95-3	4E+1	2E-2	3E-1	1E-2	8270
p-Nitrophenol	100-02-7			3E0	5E-2	8270
N-Nitrosodiphenylamine	86-30-6	1E+2	7E-3	3E-1	1E-2	8270
N-Nitrosodi-n-propylamine	621-64-7	1E-1	5E-6	3E-1	1E-2	8270
Pentachlorophenol	87-86-5	1E+3	1E0	2E0	5E-2	8270
Phenanthrene	85-01-8	4E+1	2E-3	5E-1	7E-3	8310
Phenol	108-95-2	1E+3	2E+1	3E-1	1E-2	8270
Pyrene	129-00-0	1E+3	4E0	3E-1	1E-2	8270
1,1,1,2-Tetrachloroethane	630-20-6	3E+2	1E-2	5E-3	5E-3	8260 (8240)
1,1,2,2 Tetrachloroethane	79-34-5	4E+1	2E-3	1E-4	1E-4	8310
Tetrachloroethylene	127-18-4	1E+2	7E-3	5E-3	5E-3	8260 (8240)
Toluene	108-88-3	1E+3	1E+1	5E-3	5E-3	8260 (8240)
1,2,4-Trichlorobenzene	120-82-1	1E+3	7E-1	1E-2	1E-2	8260 (8270)
1,1,1-Trichloroethane	71-55-6	1E+3	2E-1	5E-3	5E-3	8260 (8240)
1,1,2-Trichloroethane	79-00-5	1E+2	6E-3	5E-3	5E-3	8260 (8240)
Trichloroethylene	79-01-6	6E+1	5E-3	5E-3	5E-3	8260 (8240)
Trichlorofluoromethane	75-69-4	1E+3	1E+1	5E-3	5E-3	8260 (8240)
2,4,5-Trichlorophenol	95-95-4	1E+3	4E0	2E0	5E-2	8270
2,4,6-Trichlorophenol	88-06-2	4E+1	2E-3	6E-1	1E-2	8270
Vinyl chloride	75-01-4	3E-1	2E-3	1E-2	1E-2	8240
Xylene (total)	1330-20-7	1E+3	7E+1	5E-3	5E-3	8260 (8240)

SEMIVOLATILES

HAZARDOUS CONSTITUENT	CAS NO.	HBN SOIL mg/kg	HBN WATER mg/l	PQL SOIL mg/kg	PQL WATER mg/l	SUGGESTED METHOD
Anthracene	120-12-7	4E+1	2E-3	1E-1	2E-3	8310
Benzo[a]anthracene	56-55-3	2E-1	1E-5	9E-3	1E-4	8310
Benzo[b]fluoranthene	205-99-2	4E-1	2E-5	2E-2	2E-4	8310
Benzo[k]fluoranthene	207-08-9	8E+1	4E-3	2E-2	2E-4	8310
Benzo[a]pyrene	50-32-8	6E-2	3E-6	2E-2	2E-4	8310
Bis(2-chloroethoxy) methane *syn.* Dichloroethoxy ethane	111-91-1			3E-1	1E-2	8270
Bis(2-chloroethyl) ether *syn.* Dichloroethyl ether	111-44-4	6E-1	3E-5	3E-1	1E-2	8270
Bis(2-chloroisopropyl) ether *syn.* Dichloroisopropyl ether	108-60-1	9E+1	4E-2	3E-1	1E-2	8270
Bis(2-ethylhexyl) phthalate *syn.* Diethylhexyl phthalate	117-81-7	5E+1	3E-3	3E-1	1E-2	8270
4-Bromophenyl phenyl ether	101-55-3			3E-1	1E-2	8270
Butyl benzyl phthalate	85-68-7	1E+3	9E0	3E-1	1E-2	8270
p-Chloroaniline	106-47-8	3E+2	1E-1	3E-1	1E-2	8270
p-Chloro-m-cresol	59-50-7	1E+3	2E-1	3E-1	1E-2	8270
2-Chloronaphthalene	91-58-7			3E-1	1E-2	8270
2-Chlorophenol	95-57-8	4E+2	2E-1	3E-1	1E-2	8270
Chrysene	218-01-9	4E0	2E-4	2E-2	2E-3	8310
m-Cresol	108-39-4	1E+3	2E0	3E-1	1E-2	8270
o-Cresol	95-48-7	1E+3	2E0	3E-1	1E-2	8270
p-Cresol	106-44-5	1E+3	2E0	3E-1	1E-2	8270
Dibenz[a,h]anthracene	53-70-3	1E-2	7E-7	2E-2	3E-4	8310
Di-n-butyl phthalate	84-74-2	1E+3	4E0	3E-1	1E-2	8270
o-Dichlorobenzene	95-50-1	1E+3	3E0	1E-2	1E-2	8260 (8270)
m-Dichlorobenzene	541-73-1	1E+3	3E0	5E-3	5E-3	8260 (8270)
p-Dichlorobenzene	106-46-7	4E+2	7.5E-2	5E-3	5E-3	8260 (8270)
3,3'-Dichlorobenzidine	91-94-1	2E0	8E-5	1E0	2E-2	8270
2,4-Dichlorophenol	120-83-2	2E+2	1E-1	3E-1	1E-2	8270
Diethyl phthalate	84-66-2	1E+3	3E+1	3E-1	1E-2	8270
2,4-Dimethylphenol	105-67-9	4E+2	2E-2	3E-1	1E-2	8270
Dimethyl phthalate	131-11-3	1E+3	4E+2	3E-1	1E-2	8270
4,6-Dinitro-o-cresol	534-52-1	8E+1	4E-2	5E0	5E-2	8270
2,4-Dinitrophenol	51-28-5	2E+2	7E-2	2E0	5E-2	8270
2,4-Dinitrotoluene	121-14-2	1E0	5E-5	3E-1	1E-2	8270
2,6-Dinitrotoluene	606-20-2			3E-1	1E-2	8270
Di-n-octyl phthalate	117-84-0			3E-1	1E-2	8270
Fluoranthene	206-44-0	5E+2	2E-1	3E-1	1E-2	8270
Hexachlorobenzene	118-74-1	4E-1	2E-5	3E-2	5E-4	8120
Hexachlorobutadiene	87-68-3	9E+1	5E-3	5E-3	5E-3	8260 (8120)
Hexachlorocyclopentadiene	77-47-4	6E+2	2E-1	3E-1	1E-2	8270
Hexachloroethane	67-72-1	8E+1	3E-1	3E-1	1E-2	8270
Indeno[1,2,3-cd]pyrene	193-39-5	4E+1	2E-3	3E-2	4E-4	8310
Naphthalene	91-20-3	1E+3	1E+1	5E-3	5E-3	8260
p-Nitroaniline	100-01-6			1E0	2E-2	8270
Nitrobenzene	98-95-3	4E+1	2E-2	3E-1	1E-2	8270
p-Nitrophenol	100-02-7			3E0	5E-2	8270
N-Nitrosodiphenylamine	86-30-6	1E+2	7E-3	3E-1	1E-2	8270
N-Nitrosodi-n-propylamine	621-64-7	1E-1	5E-6	3E-1	1E-2	8270
Pentachlorophenol	87-86-5	1E+3	1E0	2E0	5E-2	8270
Phenanthrene	85-01-8	4E+1	2E-3	5E-1	7E-3	8310
Phenol	108-95-2	1E+3	2E+1	3E-1	1E-2	8270

SEMIVOLATILES (Continued)

HAZARDOUS CONSTITUENT	CAS NO.	HBN SOIL	HBN WATER	PQL SOIL	PQL WATER	SUGGESTED METHOD
		mg/kg	mg/l	mg/kg	mg/l	
Pyrene	129-00-0	1E+3	4E0	3E-1	1E-2	8270
1,2,4-Trichlorobenzene	120-82-1	1E+3	7E-1	1E-2	1E-2	8260 (8270)
2,4,5-Trichlorophenol	95-95-4	1E+3	4E0	2E0	5E-2	8270
2,4,6-Trichlorophenol	88-06-2	4E+1	2E-3	6E-1	1E-2	8270

METALS

HAZARDOUS CONSTITUENT

	CAS NO.	HBN SOIL mg/kg	HBN WATER mg/l	PQL SOIL mg/kg	PQL WATER mg/l	SUGGESTED METHOD
Antimony	7440-36-0	3E+1	1E-2	2E+1	3E-2	6010(s) 704
Arsenic	7440-38-2	5E-1	5E-2	3E+1	1E-2	6010(s) 706
Barium	7440-39-3	1E+3	1E0	1E0	2E-2	6010
Beryllium	7440-41-7	1E-1	7E-6	2E-1	3E-3	6010
Cadmium	7440-43-9	4E+1	1E-2	2E0	1E-3	6010(s) 713
Chromium	7440-47-3	4E+2	5E-2	4E0	1E-2	6010(s) 719
Lead	7439-92-1		5E-2	2E0	1E-2	6010(s) 742
Mercury	7439-97-6	2E+1	2E-3	1E-1	2E-3	7470
Nickel	7440-02-0	1E+3	7E-1	3E0	5E-2	6010
Selenium	7782-49-2	2E+2	1E-2	4E+1	2E-2	6010(s) 774
Silver	7440-22-4	2E+2	5E-2	4E0	2E-3	6010(s) 776
Thallium	7440-28-0	6E0	3E-3	2E+1	1E-2	6010(s) 787

EXPLOSIVES

Cyclotrimethylenetrinitramine - RDX
1,3,5,7-tetranitro-1,3,5,7-tetraazacyclooctane - HMX
Trinitrotoluene - TNT
2,4,6-Trinitrophenol-methylnitramine - Tetryl
2,6-Dinitrotoluene
2,4-Dinitrotoluene

In the submitted work plans, the Permittee shall identify the Health Based Number and Method Detection Limits to be used for the above constituents.

ATTACHMENT B

The Permittee shall submit a Quality Assurance Project Plan, Sample Collection Methods and Procedures Plan, conform to the analytical requirements and provide the Laboratory Data Package as specified in this Attachment.

1. Sample Collection Methods and Procedures - The Permittee shall:
 - a. Describe the samplers or sampling equipment for each environmental media and/or waste matrix to be sampled at each SWMU;
 - b. Describe the sampling procedure for each environmental media or waste matrix in explicit detail. Include procedures and methods for work such as bailing, drilling holes, etc.;
 - (1) Describe the sequence to be followed in conducting the field activities.
 - (2) Include quality assurance samples for analysis at the rate specified:
 - (a) Equipment Blank - One with each analytical batch or every 20 samples, whichever is greater;
 - (b) Trip Blank - One with each analytical batch or every 20 samples, whichever is greater;
 - (c) Field Blank - One with each analytical batch or every 20 samples, whichever is greater; and
 - (d) Replicates (see Figure 1) - One with each analytical batch or every 20 samples, whichever is greater.
 - (3) Identify the type and source of the sample containers to be used for each analytical parameter;
 - (4) Detail the sample preservation methods to be utilized and state the maximum permissible holding times to be allowed for each analytical parameter prior to analysis;
 - (5) Describe the sample custody procedures starting with the cleaning of sample containers to be used, and provide an example "chain-of-custody" form;

- (6) Detail the sampling equipment decontamination procedures to be utilized; and
- (7) Describe what will be done with disposable equipment contaminated on site and how contaminated materials will be disposed of, including contaminated environmental media.

2. Analyses - The Permittee shall:

- a. Identify the analytical laboratory to be used.
- b. Identify all analytical methods to be used. Analytical methods utilized must be capable of achieving the practical quantification limits (PQLs) or health based standards contained in Attachment A, whichever is lower, and the data quality requirements specified the approved method. The need for deviation from any of these criteria must be fully documented in the analytical plan and submitted to EPA for approval. EPA will review this documentation and decide whether to approve any change.

Test methods for analysis of hazardous constituents have been standardized by EPA in its publication, Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods (SW-846), 3rd Edition as updated. Suggested methods are included in Attachment A. Any other appropriate standardized method may be used by the Permittee so long as the method adheres to the quality assurance requirements in this Attachment. Non-standardized methods may be used with prior EPA approval provided the Permittee submits a comprehensive description of the test method along with data from tests designed to evaluate equivalency with standard methods. This data shall include a statistical analysis of the equivalency test data.

- c. Use, at a minimum, the quality control procedures found in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods (SW 846), 3rd Edition as updated.

3. Quality Assurance Project Plan - The Permittee shall have a Quality Assurance program for ensuring that all information, data and decisions resulting from the Verification Investigation are technically sound and properly documented. The Permittee shall also have a quality control program to obtain prescribed standards of performance in the data gathering process, which are contained in the approved method.

The Permittee shall use an analytical laboratory which has a documented Quality Assurance Program.

The Permittee shall prepare the Quality Assurance Project Plan utilizing guidelines and specifications found in the Agency's document QAMS-005/80. The Plan shall address the 16 plan elements discussed in QAMS-005/80, which are as follows:

- a. Title page, introduction;
 - b. Table of contents;
 - c. Project description;
 - d. Project organization;
 - e. Quality assurance objectives for data measurement;
 - f. Sampling procedure;
 - g. Sample and document custody procedures;
 - h. Calibration procedures and frequency;
 - i. Analytical procedures;
 - j. Data reduction, validation and reporting;
 - k. Internal quality control checks;
 - l. Performance and system audits;
 - m. Preventive maintenance;
 - n. Data measurement assessment procedures;
 - o. Corrective Action; and
 - p. Quality assurance reports to management.
4. Laboratory Data Package - The Permittee shall ensure that the laboratory(s) analyzing samples required by this Permit shall use the methods and submit the required deliverables. The laboratory data package shall include:
- a. A Quality Control Summary including:
 - (1) Methods Summary;
 - (2) Surrogate Recoveries;
 - (3) Matrix Spike/Matrix Spike Duplicate Recoveries;
 - (4) Method/Trip/Field/Blank Results; and

(5) Storage.

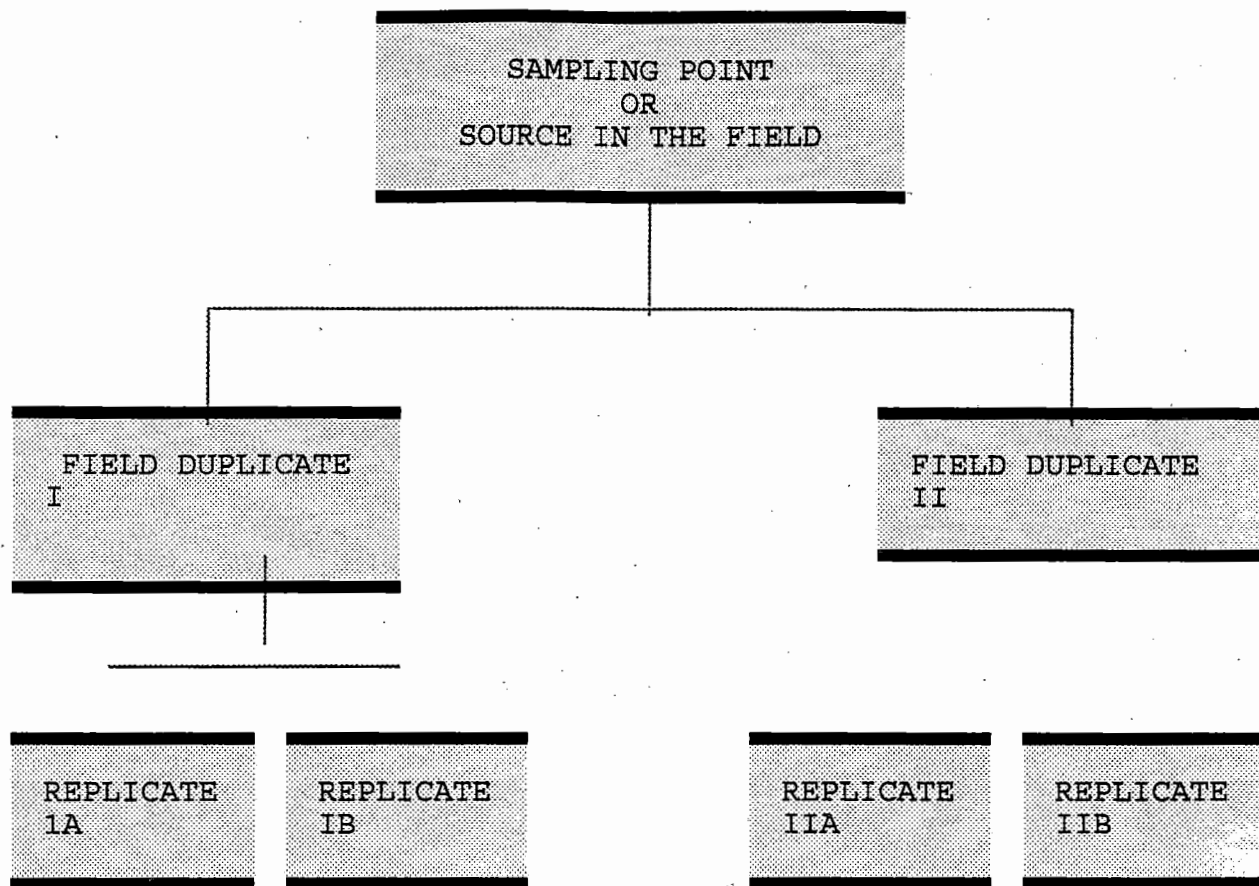
b. Sample Data Section including:

- (1) Specific Compound Results;
- (2) Results of Tentatively Identified Compound Analysis;
- (3) Detection Limits;
- (4) Sample Analysis Dates; and

c. Standards Data including sources:

The Permittee shall provide data validation of analyses done by the laboratory(ies) (to be described in the Quality Assurance Project Plan). This data validation shall determine data acceptability and shall be performed in accordance with the Functional Guidelines for Data Review for data derived by Contract Laboratory Procedure Methods. These guidelines are available from the Agency's Environmental Services Division QA Section. If another method is used, the data validation shall be performed in accordance with the QA/QC data validation criteria set forth in that method. For methods lacking QA/QC data validation protocols, the Permittee must establish validation criteria such as those in Section 8 of the EPA Series Methods in 40 CFR Part 136. The appropriate quality assurance data validation summary reports shall be submitted to EPA, along with sample data and summary sheets and final sample results.

The Permittee shall ensure that EPA personnel and/or EPA authorized representatives are allowed reasonable access to the laboratory(ies), records and personnel utilized by the Permittee for analysis of samples collected pursuant to this permit.



Duplicates are collected in the field
Replicates are analyzed in the laboratory

Figure 1